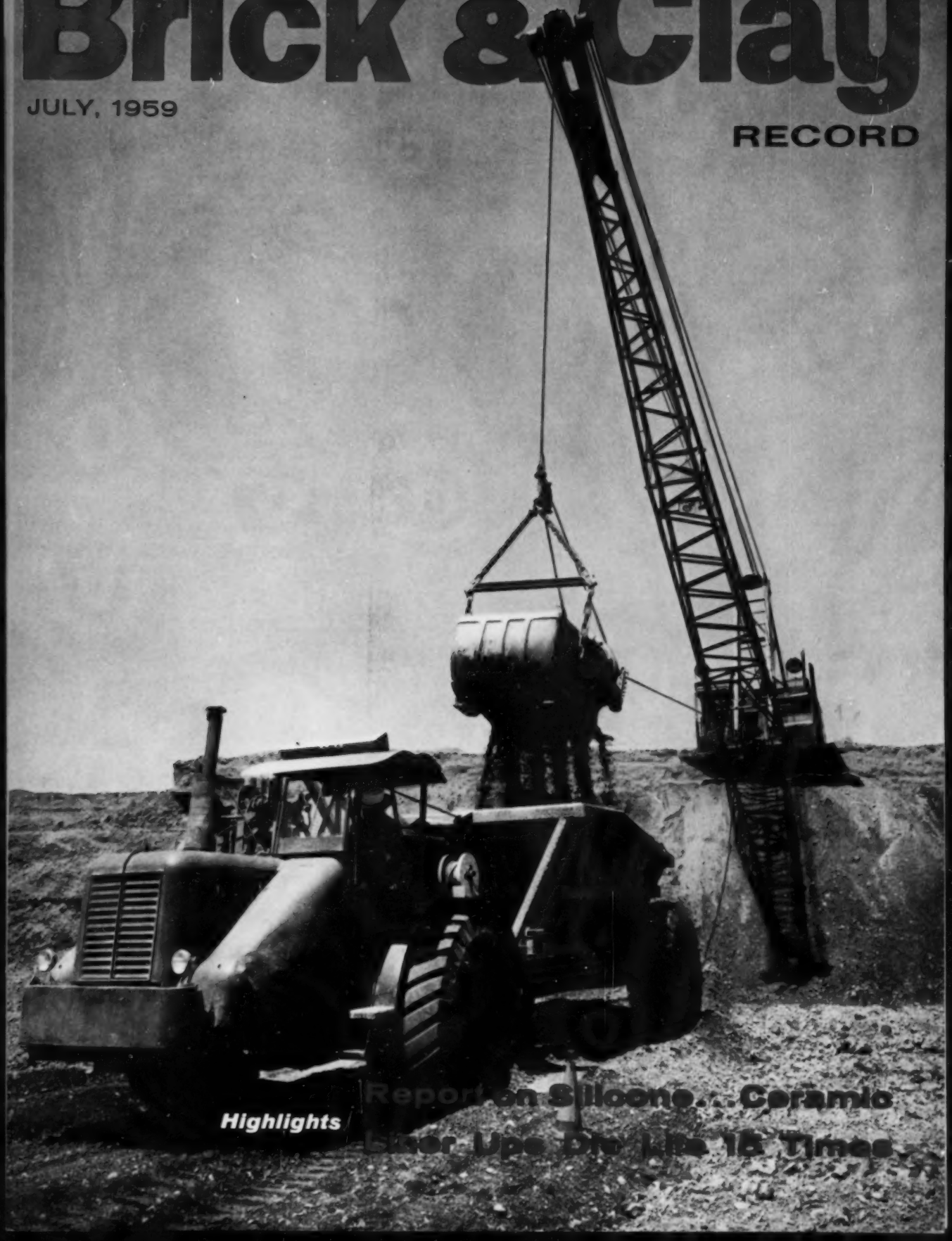
Brick & Clay RECORD

JULY, 1959

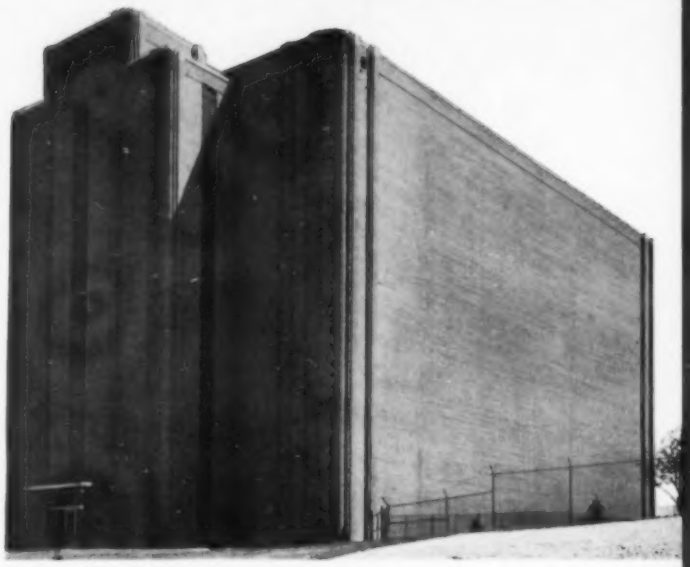


Highlights

Report on Silicone... Ceramic

Liner Ups Die Life 15 Times

from mass to the "magic of a Frank Lloyd Wright design," you can count on BONNOT EQUIPMENT



Home photos courtesy of Architect Frank Lloyd Wright, A.I.A.; photo of Vat House—the walls of which required nearly 1 million brick, courtesy of Miller High Life, of Milwaukee.

FROM the sheer mass of nearly one million brick in a towering industrial plant wall . . . to the use of many or relatively few brick in imaginative styling for homes . . . the units must be "exactly right." To meet these rigid requirements, you must produce brick and tile in which the architect, contractor and owner can put complete confidence.

What's more, you must do it in a way that makes money for your company. In addition to **product quality**, you must have **quantity production** . . . at the **lowest possible cost.** For nearly 70 years, Bonnot engineering has been developing such equipment.

Bonnot "firsts" have paced the industry. More Bonnot advancements are being tested in plant and laboratory. Your raw materials —your production demands "are the business" of Bonnot clay processing specialists — young in aggressive spirit but totaling hundreds of years in background and experience.

Bring your clay problems to Bonnot — for prompt attention, immediate action — at a time when dependable production is the big key to customer satisfaction and company profits. Bonnot welcomes the opportunity to help you produce more and better brick and tile NOW.

STEP AHEAD WITH BONNOT

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Approximately 3 million lead-glazed bricks beautify the new Washington Square Village, New York City. "To me," says Builder Paul Tishman, "they are three million pieces of fine pottery."

Vivid colors – yellow, red, blue – inspired by the paintings of Braque, Leger and Vlaminck – had to be matched exactly. These bright colors would have broken down at high firing temperatures. Lead glaze permitted firing at a low temperature – yet gave the permanent, durable brilliance Mr. Tishman wanted. These outsized bricks were made with deliberate imperfections and color variations to give them softness and character.

Free-flowing lead glazes are lending lustrous beauty to a wide variety of ceramics – from dinnerware to kitchen and bathroom fixtures. They impart low surface tension and low viscosity...melt quickly at relatively low temperatures to reduce furnace time and save you money.

You'll find many other profitable advantages in fool-proof lead compounds. Why not write today for our information-packed booklet, "Lead In The Ceramics Industries." 1961

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LOGAN CLAY PRODUCTS, Logan, Ohio, quantity producer of sewer pipe, sought a way to package their product for safe shipment and economical handling. (Idea No. S3-28)

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After checking their Acme Idea Man, they developed a method of stacking and steel strapping skids of sewer pipe, plain or jointed, which practically eliminates pipe breakage and joint damage. This new method reduces manual handling operations by 50% between kiln and user and permits loading and unloading eight times faster.

***Check your Acme Idea Man.** He is trained to help with all aspects of product packaging and protection. His field-tested suggestions are certain to be helpful. Call him at the nearest Acme Steel office or write: Dept. BES-79, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Co. of Canada, Ltd., 743 Warden Ave., Toronto 13, Ontario

ACME STEEL **STEEL STRAPPING**

LEADING CLAY JOURNAL OF THE WORLD

Brick & Clay RECORD

July, 1959 Vol. 135. No. 1

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ABC

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A First in a series on the ceramic schools in this country with a visit to Alfred University.

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This Month's Cover

This month's cover, selected as it shows the size and variety of equipment often used by the heavy clay products industry, was taken in California. The pieces of equipment shown include a Bucyrus dragline with a three yard bucket dumping into a 25-ton Wooldridge Terra Cobra Truck.

THE MAGAZINE OF
Brick — Drain Tile — Structural Tile — Clay Aggregate — Terra Cotta — Roofing Tile Refractories

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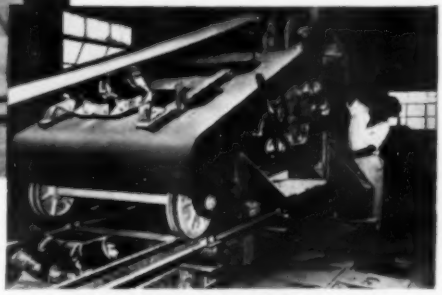
BRICK AND CLAY RECORD is indexed by Engineering Index, Inc.

STEPHENS-ADAMSON

REDUCES CLAY HANDLING COSTS FOR REFRACTORY IN MEXICO

By engineering and equipping the plant with an improved clay handling system, STEPHENS-ADAMSON enabled this refractory, located in Mexico, to meet the ever-growing demands for its products. STEPHENS-ADAMSON over the past half-century has engineered and equipped many such systems. Each plant requires special consideration of its handling problems or requirements to assure maximum efficiency and economy of operation. When lower handling costs are your aim consult the people who know bulk materials handling best . . . STEPHENS-ADAMSON.

Twin 18-inch belt conveyors on horizontal run over storage bins handle 100 tons per hour at speed of 250 feet per minute.



Swivel spout on the discharge chute of this traveling belt tripper directs flow of material to desired bin opening.

- Bucket Elevators
- Belt Conveyors
- ZIPPER Conveyor-Elevators
- REDLER Conveyor-Elevators
- Circular Bin Discharger
- TELLEVEL Bin Level Controls

Request literature on products above!

S-A

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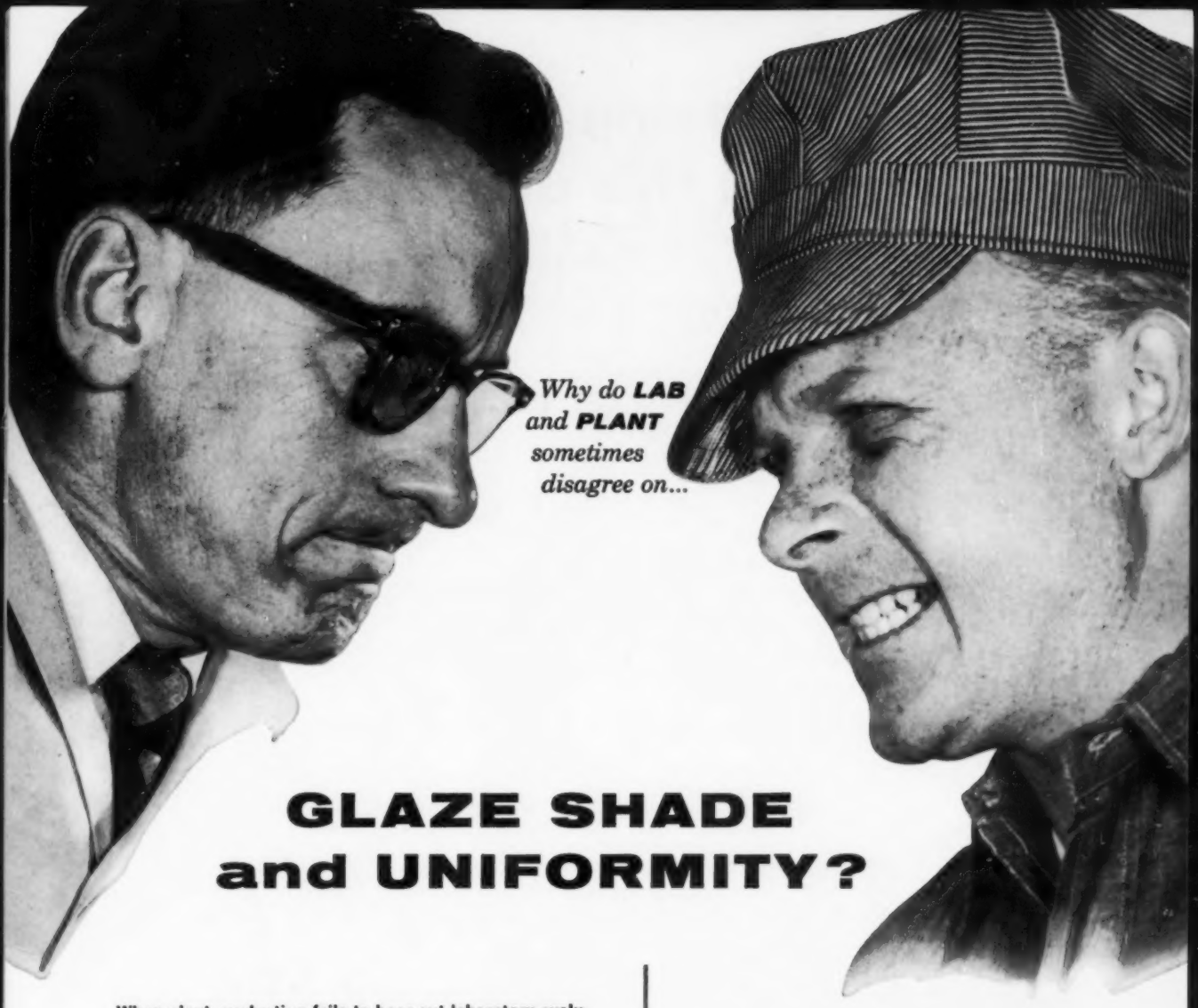

Why do ***LAB*** *and* ***PLANT*** *sometimes disagree on...*

GLAZE SHADE and UNIFORMITY?

When plant production fails to bear out laboratory evaluations, the usual cause is inherent limitations of equipment and methods in heavy schedule production.

Selecting optimum opacifier fineness for "in-plant" efficiency is a case in point. An "extra efficiency" measurable under careful laboratory control may merely be a contributing factor to glaze-shade variations in the plant. The most important characteristic of an opacifier remains its production performance per pound—which is the result of optimum particle size for hiding power plus a thoroughly dependable uniformity of composition.

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Unusually uniform, ultra-high-opacity zirconium silicates manufactured specifically to give evenness of color and finish in ceramic glazes.

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ULTROX 500W—For strong whites and pastels and special covering problems.

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MANUFACTURERS SINCE 1904

Plant Office
FAIRMONT HEIGHTS, MARYLAND

July 28, 1958

Sanford-Day Iron Works, Inc.
P. O. Box 1511
Knoxville 9
Tenn.

Attention; Mr. H. W. Sanford, Jr., Vice/ Pres.

Gentlemen.

For our transfer cars at our tunnel kiln, we would like to order the following wheels;

8 - 12 " diameter cast wheels with 3½" bore and approx. 2" tread.

The present wheels on our transfer cars wear considerable and the tread breaks off even though the travel of the transfer is only about 20 feet per trip. These wheels are pressed on the axels which we will do here.

Incidentally, as you know we have 111 kiln cars with your S-D "Floater" type ball bearing wheels. We grease these cars every 6 months with Shell Darina #2 grease, and after 26 months of continuous operation, we have not had one wheel or bearing failure. We have congratulated ourselves many times on selecting your wheels and bearings for this operation.

Yours very truly,

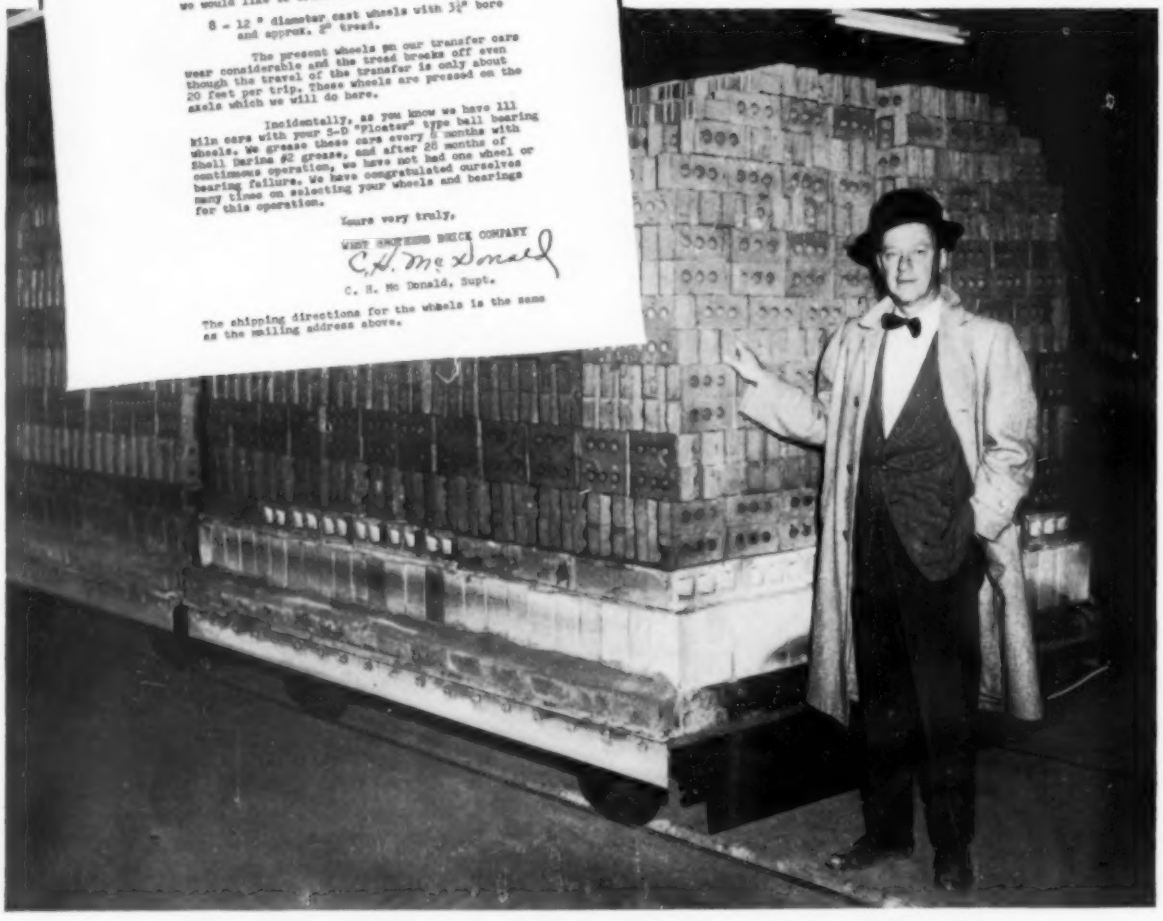
WEST BROTHERS BRICK COMPANY

C. H. Mc Donald

C. H. Mc Donald, Supt.

The shipping directions for the wheels is the same as the mailing address above.

Technically, the wheel is designed specifically for kilns, having such features as a completely closed outer hub with an inner hub protected by two special grease seals. These features effectively eliminate dust while retaining the high temperature lubricant for long periods of several months. Send us photostatic copy or blueprint of your present cars. With this information, we can quote you on replacement wheels. Savings are great with these free and easy running S-D "Floaters"! Sanford-Day Iron Works, Inc., P. O. Box 1511, Knoxville, Tenn.



Mr. C. H. McDonald, West Brothers Brick Co. superintendent, is pictured above with one of 111 of their Kiln cars equipped with S-D "Floater" ball bearing wheels.

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HOW

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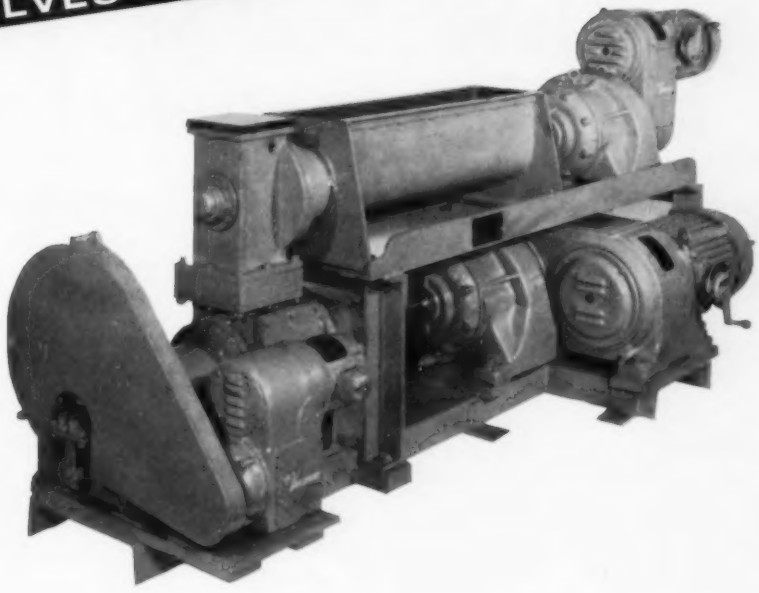

No. 5A Vacuum

EXTRUDER

The problem solved was to make a machine that could operate for 24 hours a day, supplying pellets for continuous calcining. But with its very powerful set of 4½"-diameter augers, and its ability to extrude at very high vacuums, the #5A has shown a wide usefulness for the extrusion of an infinite variety of ceramic products.

With variable speed drives, the #5A lends itself to laboratory and experimental extrusion with the ultimate in convenience. For regular production, variable speed control helps point the way to unattended automatic operation. A variety of cutters can be used, including the rotary wire design with variable drive shown above. Fixed speed drives through V-belts have been worked out at reduced costs. Power options up to 10 HP on the auger shaft for difficult extrusions. All components of the #5A are heavy duty steel weldments, eliminating all possibility of breakage.

One of the #5A models now contributes to the flexibility of the Chambers laboratory and test facilities, which you are welcome to use.

Chambers has, or can design and build, the machine you need. Write today, giving details . . . without obligation.

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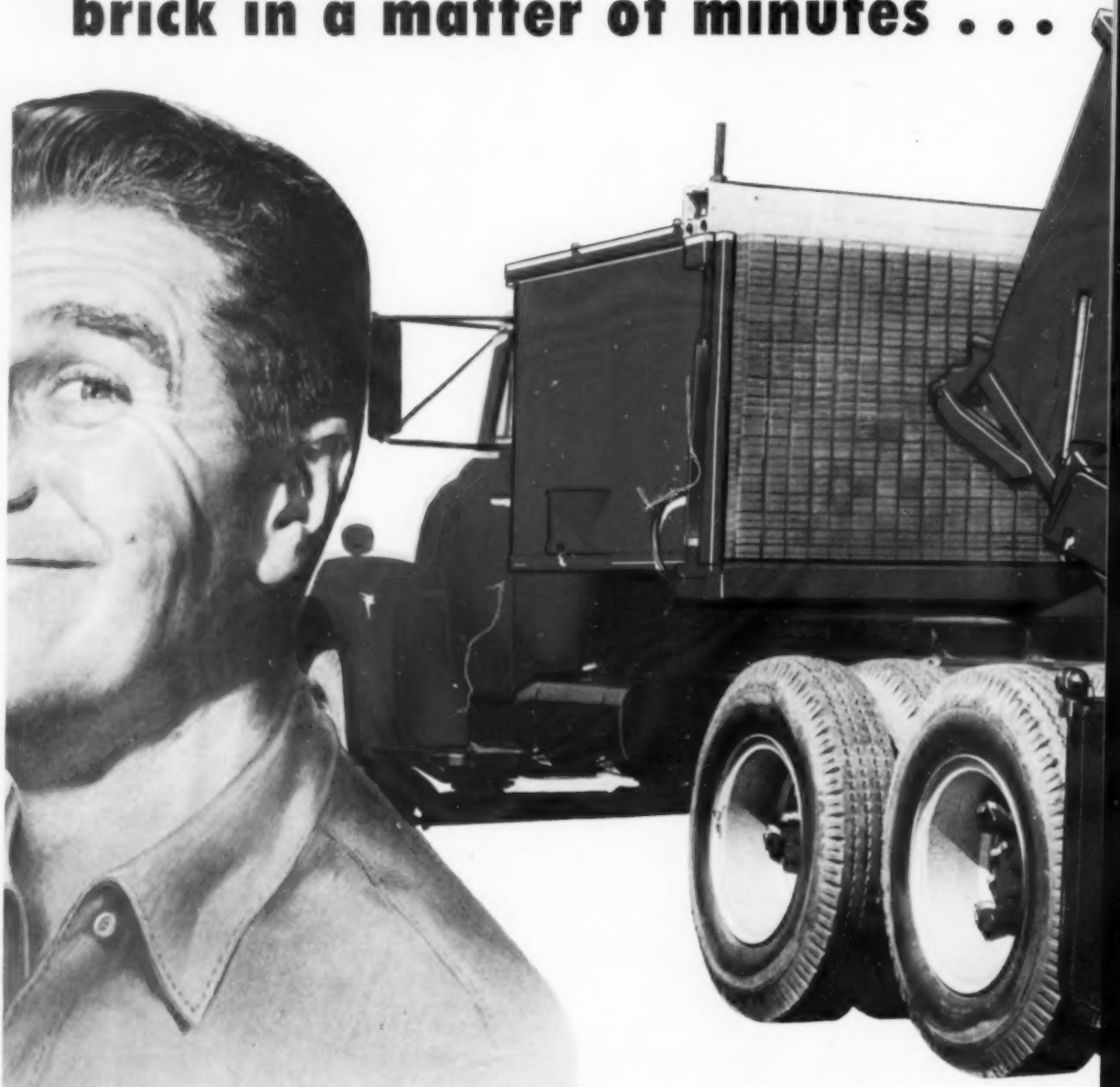
With the BIG PACK-HAULER he can load, haul and unload 6,000 brick in a matter of minutes . . .



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Build up sales . . . watch your profits climb . . . with the BIG PACK-HAULER. The Pack-Hauler eliminates costly hand loading and unloading . . . solves your long-haul problems too. Try the BIG PACK-HAULER right away . . . and see the miles stretch into smiles of profits . . . with a smaller truck fleet.

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Gentlemen: Please send me further information on the Pack-Hauler.

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The PACK-HAULER is your answer to faster, smoother brick and block handling in the yard and on the road AT LESS COST.

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NEWS from Dow Corning

Treatment Helps Sell Brick

Job-Proven, Plant-Applied Treatment Prevents Staining, Increases Customer Satisfaction

Silaneal® is the plant-applied Dow Corning brick treating material that's sure to give brick sales a real boost. Because the new treatment makes brick water-repellent, it minimizes staining and efflorescence, and assures uniform suction rates that make bricks easy to lay. Simply applied by spraying or dipping methods, low-cost Silaneal protects brick during storage as well as during service . . . keeps it new-looking.

Shown above is a wing of the Bruning Building at Mt. Prospect, Illinois. Constructed entirely of treated light grey brick, this building has withstood severe midwestern winter weather without any soiling or efflorescing. Its original beauty is entirely intact . . . a perfect example of how the customer benefits with Silaneal.

Silaneal is the only wall-tested, use-proven brick treating material. Strength tests on over 100 walls, monitored by the Structural Clay Products Research Foundation, have shown that Silaneal definitely improves the bond strength of high absorption brick. Three years of field testing and actual use have proven the effectiveness of Silaneal. And Silaneal is nonflammable and water-dilutable — there's no fire hazard in your plant.

Silaneal treatment is inexpensive. Most present users find Silaneal saves more than it costs — in reduced yard staining — and in the lower selling costs and higher volume resulting from easy-to-lay, efflorescence-free brick.

Silaneal Sells the Contractor Because Silaneal reduces the suction rate of brick, it makes construction much easier for the bricklayer. No longer is it necessary to wet brick before layup . . . a benefit which will make both workman and contractor happy. Also, bricklayers can complete more courses before striking the joints: the improved suction rate keeps mortar from setting up too soon. Another plus for the contractor: bricks treated with Silaneal seldom need an acid wash to remove mortar splashes.

Silaneal Sells the Architect

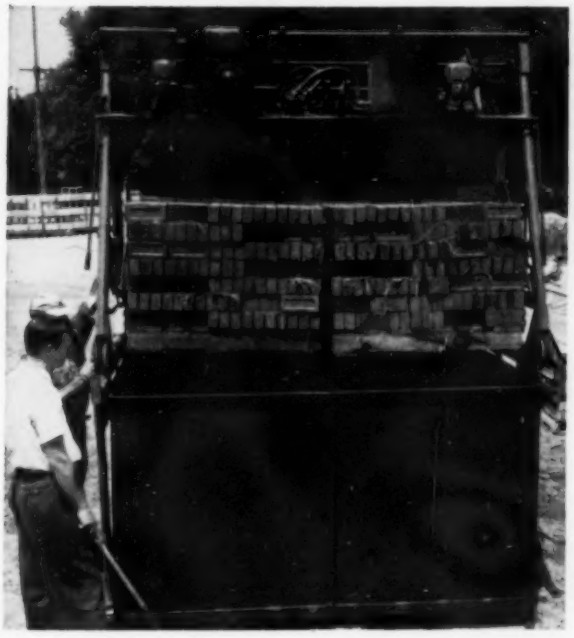
You can see, too, the tremendous advantage of Silaneal when you're selling the architect. Here's a man concerned with beauty as well as strength. Treatment with Silaneal assures that your brick will satisfy the architect's demand for *lasting* attractiveness. And he can now specify any light colored brick without worrying about staining. Another aspect of this lasting beauty in brick is that it should open up new areas of use . . . areas that have been going to curtain wall or other materials.

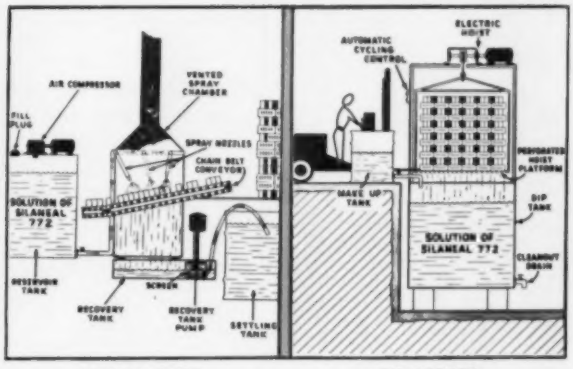
To create more markets for you, Dow Corning will be telling the Silaneal Story in every possible way: advertising, direct mail, SWEET'S CATALOG, publicity and magazine articles. As a result, architects, contractors and dealers will be specifying Silaneal; make sure you can supply it to them.

One of the first buildings to utilize brick treated with Silaneal is St. George's Catholic Church in Fort Worth, Texas. White brick by Reliance Clay Products.

first in silicones **Dow Corning**

...SILANEAL improves beauty, ease of layup





SPRAY METHOD DIP METHOD

Here is one of more than 100 walls tested during the Silaneal evaluation program using methods prescribed by the Structural Clay Products Research Foundation. Plastic bag (arrow) is applying pressure to the wall to determine structural strength. Results of tests: Silaneal was found to have little adverse effect on wall strength of most bricks . . . proved stronger than dry lay-up for high absorption brick. This particular wall is of six-inch "SCR brick", a development of S.C.P.R.F.

Silaneal Is Easy to Apply

Silaneal is simply applied by either dip or spray methods — neither involves difficulty. Schematic drawings of the two techniques appear above right — choice between them depends mainly on your plant's layout and operating methods.

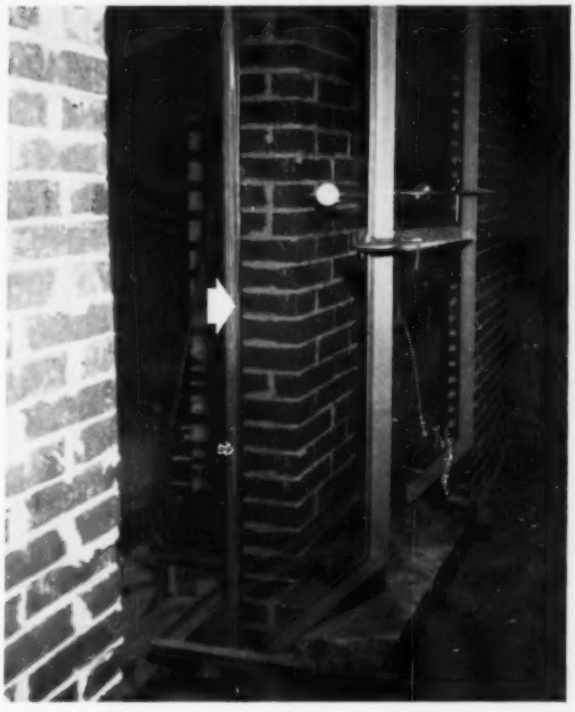
Above left, 1400 brick at a time are being raised from a dip tank after Silaneal treatment. Already palletized, the brick are ready for immediate shipment. The spray method may be preferred when brick travel from the kiln to the stacking area on a conveyor. By mounting a spray system over the conveyor the bricks can be treated without additional handling.

How Much Silaneal Does It Take?

Silaneal is supplied as a solution containing 30% solids and may be diluted to any concentration you desire just by adding more water. Ratios as low as 1 part Silaneal to 20 parts water often suffice for spraying. Lower concentrations — from 2 to 4 parts per thousand — are satisfactory for dip treating.

Do It Now

To give your brick a real sales advantage, give your brick the Silaneal advantages of greater beauty, easier lay-up. Write or call Dow Corning for complete information and technical service on Silaneal.



Your nearest Dow Corning office is your number one source for latest information and technical service on silicones.

main office:

CORPORATION, MIDLAND, MICHIGAN

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Reduce seconds, insure uniformity with Additive-A* clay conditioner

You can take much of the risk and dollar loss out of brickmaking by adding Kimberly-Clark's Additive-A at the pug mill. This amazing additive upgrades the quality of your ware, reduces chipping, sharpens color and assures more uniform size in the finished product. **Today, more and more brickmakers are specifying Additive-A clay conditioner for the following reasons:**

- Increases green plastic strength
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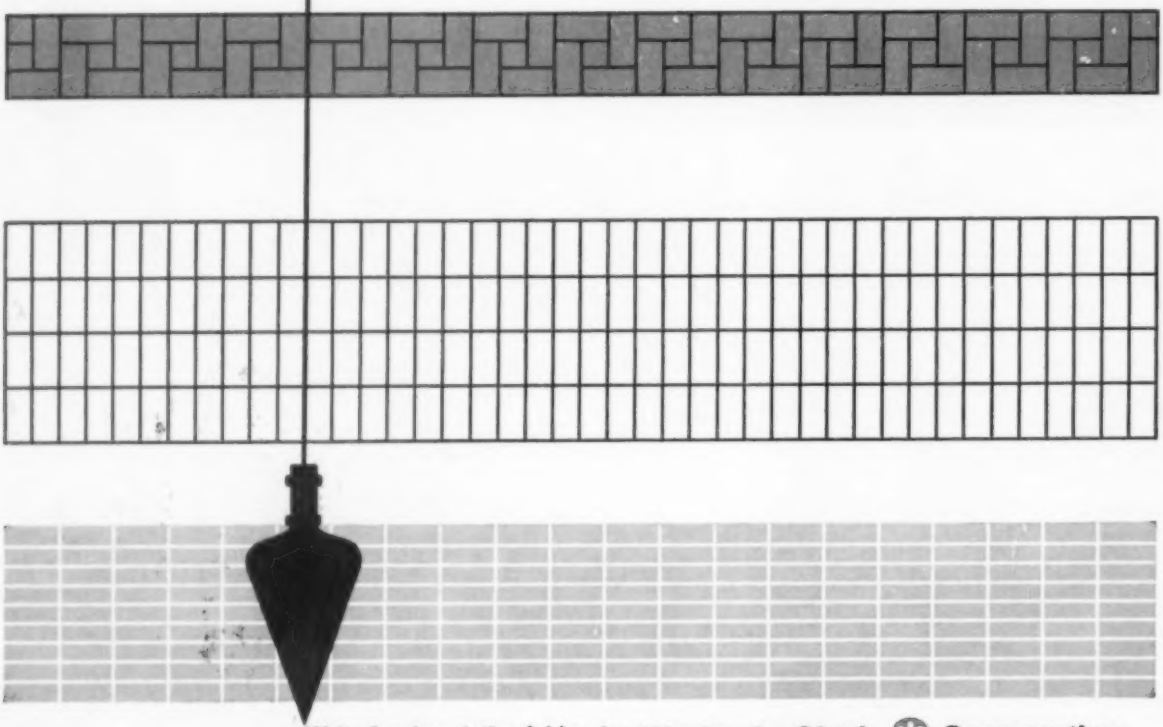
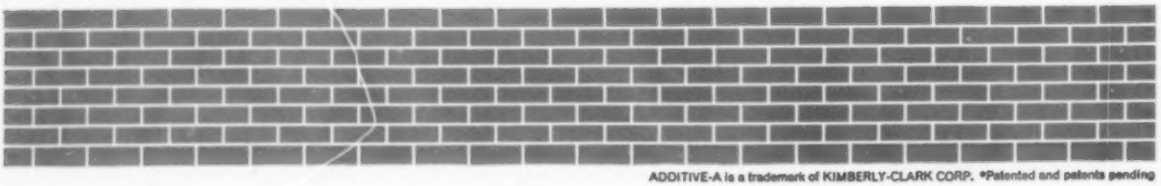
- Aids water penetration
- Increases dry green strength
- Permits more even temper
- Controls scumming
- Cuts dryer loss

ADDITIVE-A



Write for descriptive folder, to: **Kimberly-Clark Corporation**
NEENAH, WISCONSIN
CHEMICAL PRODUCTS



ADDITIVE-A is a trademark of KIMBERLY-CLARK CORP. *Patented and patents pending

Brick & Clay RECORD NEWS REPORT

A complete, compact news section summarizing all developments for the industry's attention.

House Built in 5½ Days Highlights Show

A model home constructed by the Brick & Tile Institute of Ontario, Canada, proved to be one of the feature highlights of the recent National Home Show held in Toronto.

The house, brick constructed, was built in 5½ days. During the show approximately 45,000 people went through it. It was specifically designed to highlight new ideas in the uses and color combinations of clay brick and tile, as well as their other traditional uses.

The home incorporated the latest living requirements, plus some pleasing effects in the use of traditional building materials; handsome interior walls and adjacent patio breezeway off of the bedroom of burned clay brick caught the fancy of the visitors. The patio itself illustrated several brilliant uses of burned clay brick. Modern functional uses of burned clay brick for the wall stove units, shelves, and large open fireplace in the family room also highlighted the house's many features.

INDUSTRY NEWS

Institute Names Eight

Eight representatives of firms operating four district plants were elected recently to the board of directors of the Clay Flue Lining Institute. Named were J. L. Brown and G. Tracy Price of the American Vitrified Products Co. of Cleveland; Donald R. Larson and L.A. Wagner of the Larson Clay Pipe Co. of Detroit; Joseph L. Maloney and Robert F. Larson of the Natco Corp. of Pittsburgh, and J. W. McClave and E. I. Pritchard of the Peerless Clay Corp. of Toronto.

Build Plant on East Coast

The American Vitrified Products Co. of Cleveland will construct a new $4 million dollar plant for the production of vitrified clay pipe and kindred products on the East Coast. The plant will be located in Sommerville, N. J. and will be completely automated and ultra-modern. Situated on an 87-acre tract of land, the new plant will afford the opportunity for the company to make quick deliveries to the Eastern Seaboard.

Clay Firm Expands

A new building is being added to the Pacific Clay Products plant located in Stockton, Calif. Scheduled for completion soon, the building will almost double the capacity of the factory's plastic joint work. New equipment including a curing oven will be located in the building.

Murray Tile to Merge

The Murray Tile Co. announced recently that the quarry-tile manufacturing firm would soon be acquired by the National Gypsum Co. It was stated the company would exchange all of its outstanding stock for 24,800 shares of National Gypsum common stock. No changes in personnel or customers are contemplated according to Edward M. Adams president of Murray.

Kelly to Manager's Post

Promotion of James J. Kelly to the managerial post of the Clay Products Assn. of the Southwest was announced recently. Kelly of Austin,

Texas, earned the advancement after five years prior service with the association as administrative assistant and director of promotional activities for members in Texas, Okla., and La.

Porter Sells Plants

The H. K. Porter Co. Inc., sold the land and three factories of the Laclede Works of its Refractories division in St. Louis recently to interests taking title in the name of Ann S. Dattilo. It is understood that the property is to be split up, becoming an industrial subdivision development. Porter is to continue to operate one of the plants on the tract nearest the River Des Peres which is the largest of the group. This is the only plant of the three that had been operating recently.

Hermes is Sapulpa V.P.

Richard E. Hermes was elected v.p. of Sapulpa Brick & Tile Corp. of Sapulpa, Okla. recently. The 29-year old native Sapulpan also was named a director of the company and will succeed Mrs. W. A. Whittlesey as exec. v.p. She will still retain her seat on the board and is still treasurer of the corporation. Earl J. Hermes was renamed president and Mrs. E. S. Collins was reelected secretary.

Summary For 1958

In 1958, manufacturers' shipments of clay and nonclay refractories amounted to $380 million, a decrease of 18 percent from 1957. Shipments of clay refractories, valued at $163 million, were 22 percent below those of 1957 while shipments of nonclay refractories decreased 14 percent to a total of $217 million. Of the total value of clay refractories shipped in 1958, $57 million, or 35 percent, was accounted for by fire clay brick (except superduty). Shipments of ladle brick totaled $17 million and superduty fire clay brick, $15 million. Among nonclay refractories, shipments of silica brick amounted to $42 million or 19 percent of the total value of all nonclay refractories. Shipments of magnesite and magnesite-chrome brick and shapes were valued at $31 million and chrome and chrome-magnesite brick and shapes, at $30 million.

Plan Plant Expansion

Plans for a million dollar plant expansion and appointment of a new vice president in charge of production have been announced by the board of directors of the Denver Brick & Pipe Co. Expansion of the plant at W. 45th Ave. and Fox St. will be aimed at increasing sharply the production of vitrified clay sewer pipe. The new production chief Robert H. Breitwieser, a graduate ceramic engineer, was formerly associated with the Denver Fire Clay Co., and the Standard Fire Brick Co. of Pueblo.

Marietta in Merger

Marietta Concrete Corp. recently announced the merger of its business and operations with American-Marietta Company, one of the nation's larger producers of construction materials. In Chicago, Robert E. Pflaumer, president of American-Marietta, said that Marietta Concrete would be operated as a part of the parent company's Concrete Products Division. F. Leonard Christy, president of Marietta Concrete, Pflaumer related, will continue as the chief operating officer, R. Neil Christy will maintain responsibility for engineering and production and the entire organization will remain intact.

INDUSTRY NEWS

Lavino Builds In Gary, Ind.

The E. J. Lavino Co. of Philadelphia is planning to build a multimillion dollar plant in Gary, Ind. in the near future. The plant will produce high temperature brick, and will employ some 75-100 people initially. George L. McCracken company project engineer who will direct construction said the finished plant will have in excess of 100,000 sq. ft. of floor space. The company will market a complete line of basic refractories. It will be built on the northwest corner of the Cal-Industrial center.

Sales Post to Darwin

Bill Darwin has been promoted to the position of general sales manager of the Acme Brick Co., it was announced recently. He has been with Acme since 1939. Bill Murray present branch manager at San Antonio will assume the position of division sales manager, Houston, Division, replacing Darwin. Fayette Ellis was promoted from assistant branch manager to branch manager of the Houston office.

Hood Co. Expanding

The B. Mifflin Hood Co. of Daisy, Tenn. is planning new driers in line with their expansion program. They are also planning a new building as well as some new products.

Besser To Conduct Seminar

The Besser school, a division of the Besser Co., Alpena, Mich., will conduct a seminar for block plant owners and top management personnel, August 3-5. The seminar will include a discussion of subjects such as Cost Accounting and Profit, Profit Planning, Sales Aids, and Expansion of Sales Potential. Besser seminars are conducted on a regional basis, and this August session will be open to owners and managers from Illinois, Indiana, Ohio, Kentucky, Tennessee, Mississippi, Alabama, Georgia, South Carolina and Florida.

Walsh Promotes Steimke

Frank C. Steime, previously Research Director for Walsh Refractories Corp., of St. Louis has been promoted to Vice President in Charge of Manufacturing and Research. With Walsh 18 years, his experience includes research and development in fire clay brick, cements, castables, coatings and plastics at the company's Vandalia works. He also has been active in the field of Glass House Refractory materials. His latest efforts have been centered on pioneer work in the research and development of the company's new Fusion cast and Zircon refractories.

Visitor from Australia

Douglas Nelson, manager of the Stoneware Pipe Division of R. Fowler Limited, (Potteries), located at Marrickville, New South Wales, Australia, was a recent visitor to the offices of Brick & Clay Record. He is currently on a tour of various brick plants around the country.

R. G. Vervaeke

W. Tallon

Changes at Porter

R. G. Vervaeke has been appointed manager at Pascagoula Works and Walter A. Tallon named geologist for Refractories Div., H. K. Porter Co., Inc. Vervaeke was formerly general manager of Chemical Lime Co., of Baker, Ore. Tallon will supervise the Refractories Div.'s raw material exploration and procurement activities.

A. Arthur Brown Dies

A. Arthur Brown, former personnel manager of Pesco Products Div. in Beford of Borg-Warner Corp. died recently in Allentown, Pa. He was formerly in the sales department of the Collinwood Shale Brick Co.

Trade News

Atkinson to Represent Chambers

Asher Atkinson Jr. has been appointed as sales representative in clay machinery and sales and service for Chambers Bros., in Ohio, Western Pennsylvania, Northern Ken-

tucky, and West Virginia. Since 1940 Atkinson held the position of plant superintendent at the Bradford works of the Hanley Co. He will call on all plants in the ceramic industry with particular emphasis on structural clay products and refractories.

Carbide Plant on Stream

Union Carbide's Plastic Company's new liquid epoxy resins plant at Marietta, Ohio, has gone on stream, R. K. Turner, president announced recently. The plant has a rated capacity of 15,000,000 pounds annually and will produce epoxies for such end uses as protective coatings, reinforced plastics, laminating materials, production tools and dies, adhesives, and encapsulation and potting of electronic components.

Joins RFI

Brooke L. Gunsallus recently joined The Refractories Institute. He was formerly with the Bureau of Mines of the U.S. Dept. of the Interior.

Complete Study on Apprentices' Vocations

More than one out of every four apprentices who graduated from formal apprentice programs as brick masons in 1950 advanced to foreman, supervisor, or employer within six years.

This fact is revealed by figures compiled by Joseph H. Schuster of the Bureau of Apprenticeship, U.S. Department of Labor. Schuster sent questionnaires to a representative group of journeymen who completed apprenticeships in 1950. Among the questions was one that asked what they did in 1956.

The answers reveal that if in 1956 you had talked with an average group of 100 masons from the graduating class of 1950 you would have found 19 supervisors and foremen, 10 contractors and employers, and 70 journeymen. Few then would have been out of the trade.

Here are some other facts that Schuster learned about this typical group of 100:

Runs in Family

Brick masonry runs in a family's blood. Thirty-nine journeymen were in the same trade as their families. The tradition of son following father was stronger in the brick mason than in any other craft.

Eighty-nine studied at high school and of these 57 graduated.

Ninety were veterans of whom 58 received GI assistance while apprenticing. Thirteen would not have been able to complete their apprenticeships were it not for this assistance.

Parents and relatives thought so highly of the trade that they urged 65 to apprentice. Employers spurred on another 19, and union officers another 15. School teachers were of little importance.

Forty of the journeymen went directly to the employers and asked to apprentice, 30 applied through the union, 15 through apprenticeship committees, and the rest used other methods.

F. Sherman Breshears (left) president of the National Assn. of Distributors and Dealers of Structual Clay Products (NADD), gets some expert pointers on structural facing tile from Paul E. Schneider, chairman of the Facing Tile Institute, at a meeting of the two organizations held in Washington June 4. The meeting marked the first time that the two organizations have met together.

LETTERS TO THE EDITOR

Gentlemen:

We are interested in a source of supply for clay grave markers. We have had two inquiries from different sources for this product in the last few days.

V. M. Krick
The Krick-Tyndall Co.,
Decatur, Ind.

Dear Sirs:

We noted in the May 1959 issue of the Brick and Clay record the picture and story concerning our plant here in Dickinson, North Dakota. We appreciate the publicity and also enjoy the other articles of your magazine.

The building is an overall length of 420 feet, and 160 in width. The tunnel kiln is being built by Allied Engineering Division. The plant will manufacture sewer pipe, flue lining, and wall coping.

It has long been known that North Dakota has a great amount of clay, and the reserves here at Dickinson are especially large.

Dic-Kota Clay Products Co.
Dickinson, North Dakota

Gentlemen:

Knowing the scope of your readership, perhaps you could help us with the following problem. Recently we hired a man by the name of Y. Y. Wong for our operation here. Unfortunately we learned after he joined us that his specialty was actually centered around structural clay products, something we are not primarily concerned with here. His background thus does not suit him for our type of operation at Haeger.

Mr. Wong is 59 years old and holds a Bachelor of Ceramic Engineering Degree from Ohio State University. His wide experience includes a period with the Los Angeles Pressed Brick Co. developing colors and glazes for their terra cotta and enameled brick. He later was in charge of their enamel brick department. He was also employed by a ceramic company in Hong Kong.

If any of your readers feel that Mr. Wong might fit into their operation I would appreciate it if they would contact me. Thank you.

Joe Estes
Haeger Pottery
Dundee, Ill.

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Appearing in this issue...

MASONRY CLEANERS by the Process Solvent Co., Inc., removes excess mortar from brick or glazed tile (non metallic) expertly.
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RF THERMAL AIR FANS by the Garden City Fan Co., are simple to install, inexpensive to maintain, and registers temperatures to 1850°F.
10/Circle on Reader's Service Coupon

FORK LIFT TRUCKS by Towmotor-Gerlinger. Fifteen standard trucks are so compact that they drive under six-foot doorways.
11/Circle on Reader's Service Coupon

ELECTRIC SCREENS HEATERS by F. R. Hannon & Sons eliminate binding, increase tonnage, build greater profits and speed production.
12/Circle on Reader's Service Coupon

AXIAL FLOW FANS by Westinghouse for exhaust of fumes and vapors and for standard air corrosive gases and elevated temperatures.
13/Circle on Reader's Service Coupon

HOW TO USE:

All you do is circle the number of the editorial item or the page number of the advertisement on this card, and mail it to us.

HYDRAULIC DRILL by the Paris Mfg. Co. allows samples obtained from depths up to 100 ft. Feature heavy duty, four speed augur, finger tip control.
14/Circle on Reader's Service Coupon

PRIESTER BRICK FORKS by the Bradney Machine Co., Inc., are designed to make brick handling easier as well as saving time, money and labor.
15/Circle on Reader's Service Coupon

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Page 75 Fate-Root-Heath
Page 76 American Clay Machinery

I'm also interested in those items shown in the Advertisements. Please have manufacturer send me literature and information.

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This card void after September 30, 1959

BRIDGE CRANE BLOCK CUBER by the Besser Co., builds a cube for convenient fork lift truck transportation to the storage yard. Operator guides crane-carrying block to the correct position for making a net square tube.

16/Circle on Reader's Service Coupon

THE CEMENT GUN METHOD by the Cement Gun Company for use on furnace repair refractory installation is simple to operate. It is reported that up to 5,000 pounds of refractory material an hour can be placed.

17/Circle on Reader's Service Coupon

TURBINE-TYPE MIXER by the T. L. Smith Co., reportedly will yield four times the production from the same man hours. Is a high-speed, compact low-headroom mixer for mixing all kinds of refractories.

18/Circle on Reader's Service Coupon

MULLER TYPE MIXERS AND GRINDERS by the Clearfield Machine Co., boasts of low maintenance and power consumption. This heavy duty dry pan is available in 9 and 10-ft diam., and is said to incorporate all the features essential to efficient, economical grinding.

19/Circle on Reader's Service Coupon

COLORED SPECKS by Drakenfeld may be added to glaze, brick and structural facing tile thus giving it a "wanted look."

20/Circle on Reader's Service Coupon

BITUMINOUS COAL by Baltimore & Ohio R.R. insures constant supply, constant efficiency, and constant low cost.

21/Circle on Reader's Service Coupon

ADDITIVE—A CLAY CONDITIONER by Kimberly Clark Co., is said to improve clay workability, aid water penetration, increase dry green strength, permit more even temper control scumming, and cut dryer loss.

22/Circle on Reader's Service Coupon

TUBE BORIUM by the Stoody Co. repels abrasive wear utilizing relatively coarse, ready-made tungsten carbide particles. These are packed in mild steel tubes for application by arc or oxy-acetylene torch and in continuous wires for semi-and fully automatic application.

23/Circle on Reader's Service Coupon

STANDARD PYROMETRIC COMES by the Edward Orton Foundation. Plaques of the cone placed so that they may be observed through the kiln peep holes permit a visual check on the progress of firing during its latter stages.

24/Circle on Reader's Service Coupon

KOOLERS by the Manufacturers Equipment Co. reportedly saves 72 or more hours as compared to natural kiln cooling. It is capable of removing tremendous volumes of air. These portable fans can be moved from kiln to kiln or wherever else needed.

25/Circle on Reader's Service Coupon

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NEW PRODUCTS

Deflection Tester

Plastic deflection tester that indicates the deflection of thermoplastics when subjected to various loads and temperatures in accordance with ASTM test D648-56. As many as four samples can reportedly be tested simultaneously by placing each in a specimen holder and lowering the holders into an insulated bath. Instrument is 26 x 16-½ x 23 inches high.

American Instrument Co., Inc.

1/Circle on Reader's Service Coupon

Red Quarry Tile

Red quarry tile with virtual zero absorption which is said to be attractive enough for showrooms yet permanently resistant to absorption impacts and abrasion. It is said to be ideal for floors and walls subject to extreme abuse. It is not dented by small objects no matter how constant the usage. Is said to be easily washable with a hose. Is non-absorptive and odorless.

Adel Clay Products Co.

2/Circle on Reader's Service Coupon

Industrial Spray Nozzle

Extra-wide angle, circular spray nozzle for industrial applications. Called Span-Jet, is was developed for spraying or washing the inside of tubular units. Is made in two styles to provide either a 180° flat, circular spray pattern or a 160° hollow-cone spray pattern. The nozzles are made in capacities from a .75 to 10 gallons per minute at 40 lbs. p.s.i. of pressure.

Wm. Steinen Mfg. Co.

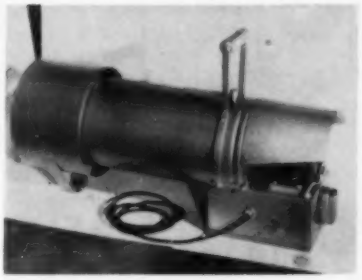
3/Circle on Reader's Service Coupon

Belt Dressing

A belt dressing in aerosol form which can be sprayed on moving transmission belts is available. Trade name is Sprazon; is reported to be completely safe. Can be used on Vee, Rubber, Fabric or Leather belts. May be applied while drive is running thus there is no loss of production. Manufacturer claims that product aids in preventing belt slip and also prolongs belt life.

Graton & Knight Co.

4/Circle on Reader's Service Coupon



Gas Forced Heat Space Heater

L.P. gas forced heat space heater which is rated at 200,000 B.T.U. Is said to produce a high volume of quiet, sootless, odorless heat and is small and easy to handle. Weight is 45 lbs. Unit includes a burner control that quickly turns off the fuel, if the power should fail or the flow of gas be interrupted for any reason. The heater can be set up in a few minutes, connected with a gas bottle, and plugged into a 110 volt A.C. outlet. A thermostat is provided at small extra cost.

Muller Machinery Co., Inc.

5/Circle on Reader's Service Coupon

Heavy Capacity Outdoor Fork Trucks

Three heavy capacity pneumatic tire fork trucks for outside handling work over piers, unpaved yards and similar areas. Trucks labeled CY-60, 6,000 lbs., capacity, CY-70, 7000 lbs., and CY-80, 8000 lbs. (all at 24 inch load center.) Trucks' high maneuverability over uneven terrain is achieved with long wheelbases combined with comparitively short turning radii.

Clark Equipment Co.

6/Circle on Reader's Service Coupon

Temperature Regulator

Temperature regulator for proportional control of water, gas or low pressure steam is designed for all applications where a self-contained valve unit assembly may be particularly suited. No assembly, linkage or adjustment is necessary either before or after installation, except for the setting of the control drive to the exact desired temperature. Has marked calibrated adjusting dial for precise temperature control, an electric industrial motor operator and armored capillary tubing.

Barber-Coleman Co.

7/Circle on Reader's Service Coupon

Self-Propelled Scraper

The Model C Speedpull is reportedly a fast, high-production six-wheel self-propelled scraper. The machine teams a 20-yard heaped-capacity Fullpak scraper with a 276-hp 4-wheel prime mover. Features include

excellent horsepower-to-weight ratio of 336 lbs of total loaded weight per horsepower. Low-friction drive train, specially designed transmission, and ducted fan permits high percentage of engine hp to be delivered to the drive wheels. Also has Hydrair suspension of front wheels.

Le Tourneau-Westinghouse Co.

8/Circle on Reader's Service Coupon

Brick Promotion Stressed at Mississippi Meeting

Two-State Association Meeting Hears SCPI Men, Gil Robinson, Mississippi Architect Discuss New Products, Sales Methods

The annual meeting of the Mississippi-Louisiana Brick and Tile Manufacturers Association at Edgewater Park, Miss. was highlighted by reports on recent developments in the promotion of brick and the brick industry.

Held on June 5th and 6th, the meeting heard Chad Heath, General Shale Products Co., Bob Taylor from SCPRF, Joe Stryker and Bill Roark from SCPI, John Pritchard a Mississippi Architect and Regional director of AIA, and Gil Robinson from Clemson College.

Prior to the meeting all of the members of the Association had sent samples of the clay that they use for normal production of brick to Robinson at Clemson. There the limited quantities were used to make sample block. Several mixes of clay and vermiculite were used to produce block of widely varying densities. In spite of the limited quantities of clay and the impossibility of determining proper firing schedules for the different clays, satisfactory block were prepared from all of the material submitted. Several of the samples were described by the operators present as being of good market quality.

Produce 20″ Block

Robinson, who spoke on recent developments in the clay bonded block program at Clemson, reported that new forming equipment being used at the Travelers Rest experimental plant is now producing 20# block that have minimum compressive strengths of 1000 psi over the gross area of the block. He also reported that a method of producing hard aggregate with the use of vermiculite has been developed that could be competitive in cost.

Roark outlined the "market conversion" program that has been successfully used in several areas where the percentage of the local market for brick was not up to a desirable level. He explained that the first step was to gather facts about the consumption of brick in the area under study in relation to the potential and then to determine why the sale of brick was held back in that area. As soon as the reason or reasons for the lack of market penetration was determined the proper action to correct the condition would become apparent and could be undertaken with a good chance of success.

Roark listed as questions that must be answered in this kind of study as: 1. Future growth of the area, 2. Future of residential construction, 3. Per cent of brick versus frame, 4.

At left, Five Gulf State plants are represented together with the clay bonded block made from that plants material. Beginning at the left Pete Schneider, St. Joe Brick Works; Charles Laird, Holly Springs Brick & Tile Co.; J. W. Kornrumpf, Hattiesburg Brick Works; Gil Robinson, Clemson College, R. D. Robinson, Tri-State Brick & Tile and Fred Oates, Delta Brick & Tile Co.

New Officers of the Mississippi-Louisiana Association, standing: Ralph Waite, president; Earl Scheiider, secretary-treasurer and Julian Rives. They are succeeding Pete Schneider, J. V. Phillips and J. W. Kornrumpf seated.

Availability of contractors and brick layers, 5. House builders attitudes and 6. Comparative costs.

He mentioned two causes that have been found in some areas studied as a shortage of labor or masonry contractors and a lack of variety of brick in the market.

The recent depletion hearings in Washington in which the industry was forced to expend a great effort to overcome the actions of the Treasury Department were reviewed by Stryker. Stryker was full of praise for the industry-wide cooperation that developed during these hearings. It was reported that out of 532 telegrams sent to the industry plants asking for confidential information to be used to refute some of the Treasury testimony, only one company refused to reply and 516 returned their replies within 24 hours.

New officers elected and installed for the coming year are: president Ralph Waite; general manager of the Tupelo Tile Co.; Julian Rives, Corinth, vice president, and Earl Schneider, Laurel, Mississippi, secretary-treasurer.

New Officers of the Mississippi-Louisiana Association, standing; Ralph Waite, president; Earl Scheider, secretary-treasurer and Julian Rives. They are succeeding Pete Schneider, J. V. Phillips and J. W. Kornrumpf seated.

Plan To Operate Plant Devoted Exclusively To Production Technique Development

Three Combine To Make SCPRF Aggregate

John Stewart (left) of Stark Ceramics, Inc., discusses blueprints for light weight aggregate production with interested parties. Showing interest in the blueprint also are Roy Shipley, of the Natco Corp., and D. J. Renkert (right) of Metropolitan Brick, Inc., Canton.

Plans for the operation of a plant devoted exclusively to end use research and production techniques for new Lightweight structural facing tile and brick are announced by company spokesmen for the Natco Corp., of Pittsburgh, Pa., which operates plants in the Canton area; Metropolitan Brick, Inc., of Canton, and Stark Ceramics, Inc., East Canton.

First of its kind in the clay industry, this joint project is being developed around the production and utilization of a new lightweight aggregate just released by the Structural Clay Products Research Foundation, in Geneva, Illinois.

To Buy Mapleton Plant

To speed up the manufacture and extend the uses of "SCPRF aggregate" on a production basis, the three Stark County clay products manufacturers have entered into an option to purchase the plant and all physical assets of the Mapleton Clay Products Co., of Mapleton, Ohio.

This plant previously produced salt-glazed structural facing tile that has been shipped into Canada, and as far south as Texas for the past quarter century.

An extensive modernization program at Mapleton, which will become a pilot plant for the entire clay products industry, will be high spotted by the erection of a Selas Furnace for transforming raw clay into lightweight aggregate.

Installation of the furnace itself calls for an expenditure in excess of $250,000. It will be one of two in the United States this year.

According to present plans, enough aggregate will be produced at Mapleton to make 180,000 brick equivalent per day. Complete operation is anticipated by early Spring. The project will represent a total investment of more than half a million dollars.

Structural Tile First

At Mapleton, initial emphasis will be on glazed structural facing tile. Produced with "SCPRF aggregate," new tile units will weigh approximately ⅓ less than conventional units.

During the manufacturing process, when "SCPRF aggregate" is used, drying and burning time for the ware will be reduced as much as 50%. From the standpoint of the designer and mason contractor, the use of this lightweight aggregate will also insure tile that are dimensionally accurate—true "precision products" to meet today's most exacting architectural demands.

Far Beyond Clay Products

In addition, the use of "SCPRF aggregate" will go far beyond the field of clay products. Already potential applications include acoustical plaster, wall board, plastic floor tile, texture paints and insulating firebrick. Along with commercial production of the aggregate, research at Mapleton is expected to extend uses into still other fields.

Because of the techniques in processing, the resultant "SCPRF aggregate" makes it possible to use raw clay that previously had been passed over as usuable.

Canton, Ohio clays were among the first of nearly 100 tested at Geneva, and are easily adaptable to the new processing. Natco, Metropolitan and Stark own and lease large acreages of this clay land.

The aggregate has a diameter range of 1/16" or less, and a bulk density of 20 to 30 pounds per cubic foot. This compares to a bulk density of 50 to 60 pounds per cubic foot of other familiar light weight aggregates."

The furnace itself is 40′ high, with feeding equipment and elevator extending an additional 10′ in the air. The adjacent mixing and drying unit is approxmately 50′ in diameter and 35′ high.

Plant to be Built

Plans for the construction of a million dollar brick plant to be constructed at Gleason, Tenn. have been completed according to Mayor Frank Margrave. While the identity of the plant was not disclosed it was revealed that it would be an expansion of an old and well-established brick company of middle Tennessee.

Exterior Sells House

A house must have eye-appeal for you or you can't get interested in it. This was the opinion of the majority of the delegates at the recent Family Housing Conference of Los Angeles held in that city. Durability was given second place, with low maintenance of exterior finish ranked third among important factors that would sway their decision to purchase a house.

GLAZE OR ENGOBE

Which method are you using?

Ferro can work with you to set up techniques, processes and quality controls for either glazing or engobe . . . or for other brick coloring methods: body stains and sandblasting.

Ferro inorganic colors—developed from long experience in all kinds of brickmaking—retain color uniformity and light and heat stability through ton after ton of the brick you make.

Write today, describing your equipment, firing ranges, type of clay and proposed method of applying color.

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Color Division

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Ferro Enamels (Canada) Ltd., Oakville, Ontario, Canada.
Foreign plants in Argentina, Australia, Brazil, Chile, England, France, Holland, Japan, Mexico, South Africa.

10 Years of Progress -

Ten years of structural clay research were observed by some 150 members of the Structural Clay Products Research Foundation at their annual mid-year meeting held in Geneva, Ill., June 18-19.

The members, gathered at the research center, heard various SCPRF speakers review past activities, results to date, and elaborate on current objectives and plans for the future.

Bob Taylor, research center director, recalled that three objectives were decided upon when the foundation was established following a research study by Arthur D. Little, Inc. The objectives decided upon were End-Use Research, development of new products for present and new markets, and, development of improved plant techniques and improved clay bodies for current and new products.

Taylor emphasized that these original objectives are as sound today as when they were first proposed. Their relative importance however, one to another should be constantly reviewed and evaluated in terms of the industry's needs in relation to its markets and competitive situation with other products in the building field.

In discussing the accomplishments of the foundation the success of the SCR insulated cavity wall was noted. The wall now has been thoroughly tested for thermal performance and resistance to water penetration. A combination of high heat capacity and low U value make it today one of the most thermally efficient walls from an air conditioning or heating standpoint, and yet permits the use of exposed brick or tile units on the interior.

Other accomplishments include wall strength tests, with several kinds of mortar, and development of a load-bearing multi-story building design that attains a height of 10-12 stories with 6″ of 8″ bearing walls or partitions. Mortar research has occupied much of the researches time with particular attention being given to the testing of standard mortars.

Weathertight masonry construction also has drawn its share of attention. The elimination of headers has been shown to be advantageous in preventing water penetration. The use of silicones for the treatment of leaky walls was studied also.

Cleaning techniques for masonry construction, a problem of interest to many, has been evaluated and recommendations have been developed for the removal of green stain on vanadium containing buff clays.

SCPRF Looks Ahead

Unit design research included development of the "SCR brick" unit for economical solid masonry load bearing wall construction in the residential field. Taylor stressed the value of new products in the industry adding that members "should look at a product very critically ascertaining what it can do in the plant and whether or not it will be a high plant return." In encountering any problems on plant operation members were again urged to seek out and ask for proper tests from SCPRF and also Alfred University.

The guests were informed that present research efforts were concentrated financially and man-power wise primarily on the "SCR" masonry process, panelization and structural research, lightweight research and packaging research.

Mal Allen reported extensively on the SCR masonry research process and the growing acceptance of the use of corner poles throughout the country.

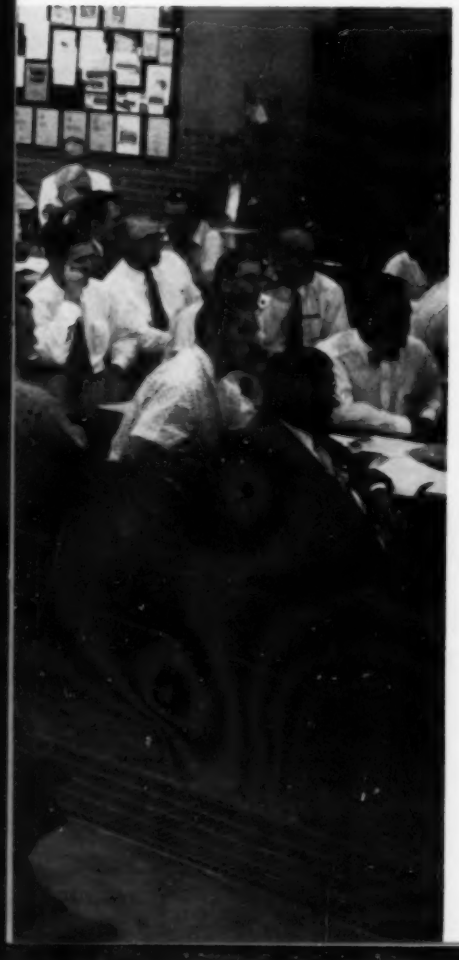
Allen remarked that the future looks very bright and that more and more people are taking an active part in the promotion of the process. Mason contractors have generally accepted the idea of the masonry process according to Allen. Remarking further on the corner poles he stated that they are definitely more than a lab experiment.

C. B. Monk reported to the audience on thermal research. Monk, a divisional manager at Geneva, compared the various assets and defects of such materials as steel, concrete, wood and plastics. He talked of heat capacity studies, insulated cavity walls and outlined the principles of Styrofoam insulation.

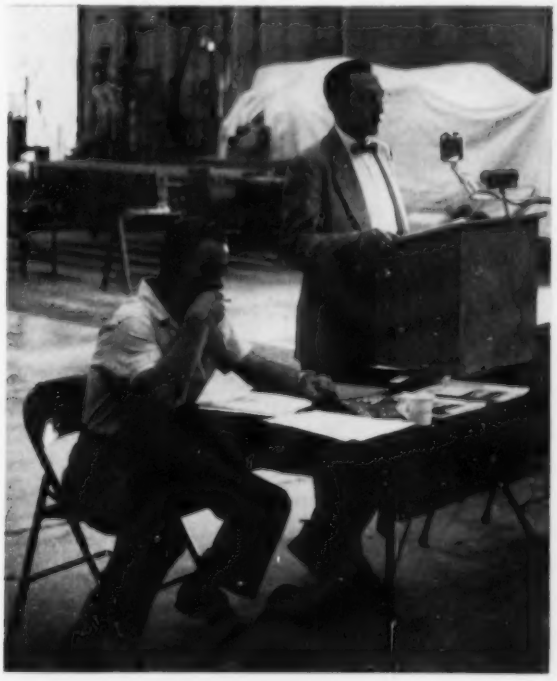
Taylor and Paul Johnson reported briefly on the progress of the lightweight research program. A demonstration was given of the process used to prepare raw clay for the aggregate furnace. It was announced that the first actual plant installation of a complete lightweight clay aggregate producing unit is to start this year.

Others to address the meeting included Dr. Wayne Brownell who reviewed progress in the field of fundamental research at Alfred U. A demonstration was given of the process used to prepare raw clay for the aggregate furnace.

The tone of the two-day meeting seemed to reflect the idea that while SCPRF is proud of the record they have achieved during their first decade, an even more unified effort in the future will enable them to progress much further during the next 10 years.



Guests at the affair heard Bob Taylor (left) and Dr. Wayne Brownell describe the remarkable progress that has been made during the last 10 *years.*



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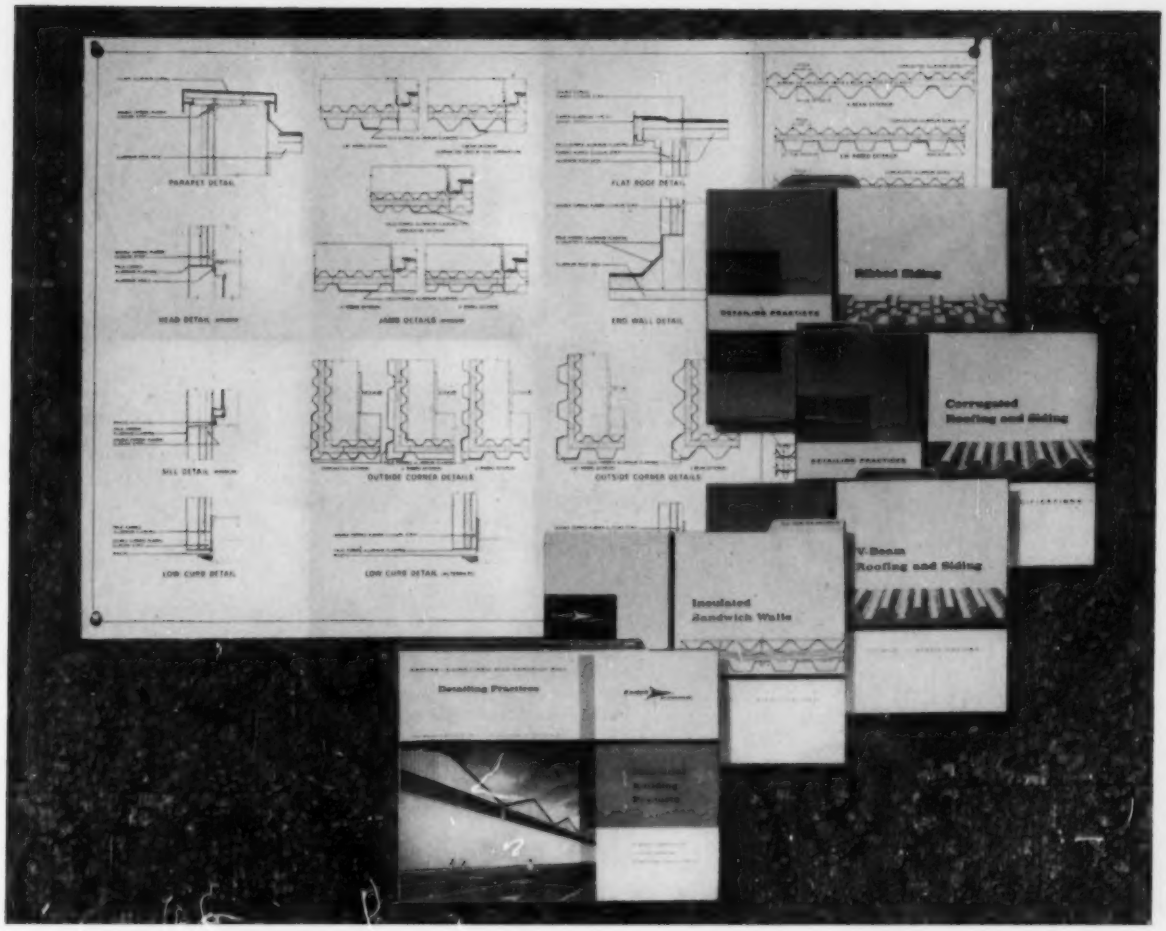

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President Krebs discussing plant expansion plans with (left to right) Charles Hermann, plant superintendent; Louis Sorapiglia, office manager; Charles Garrett, vice president; and R. D. Putnam, public relations man.

Besser Mixer with Skip Loader elevates mixed concrete to Vibrapac. Permits all equipment to be on ground level.

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A. C. Krebs Company, Louisville, Ky., began block making operations in 1941. Four years later, they bought their first Besser Vibrapac, and they've been using Vibrapacs ever since.

"*Besser Means Better Machines*", relates A. C. Krebs, President and Owner, affectionately called "Silver Eagle" by his employees. And he added..."*When better machines are built, Besser will build them.*"

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48-176

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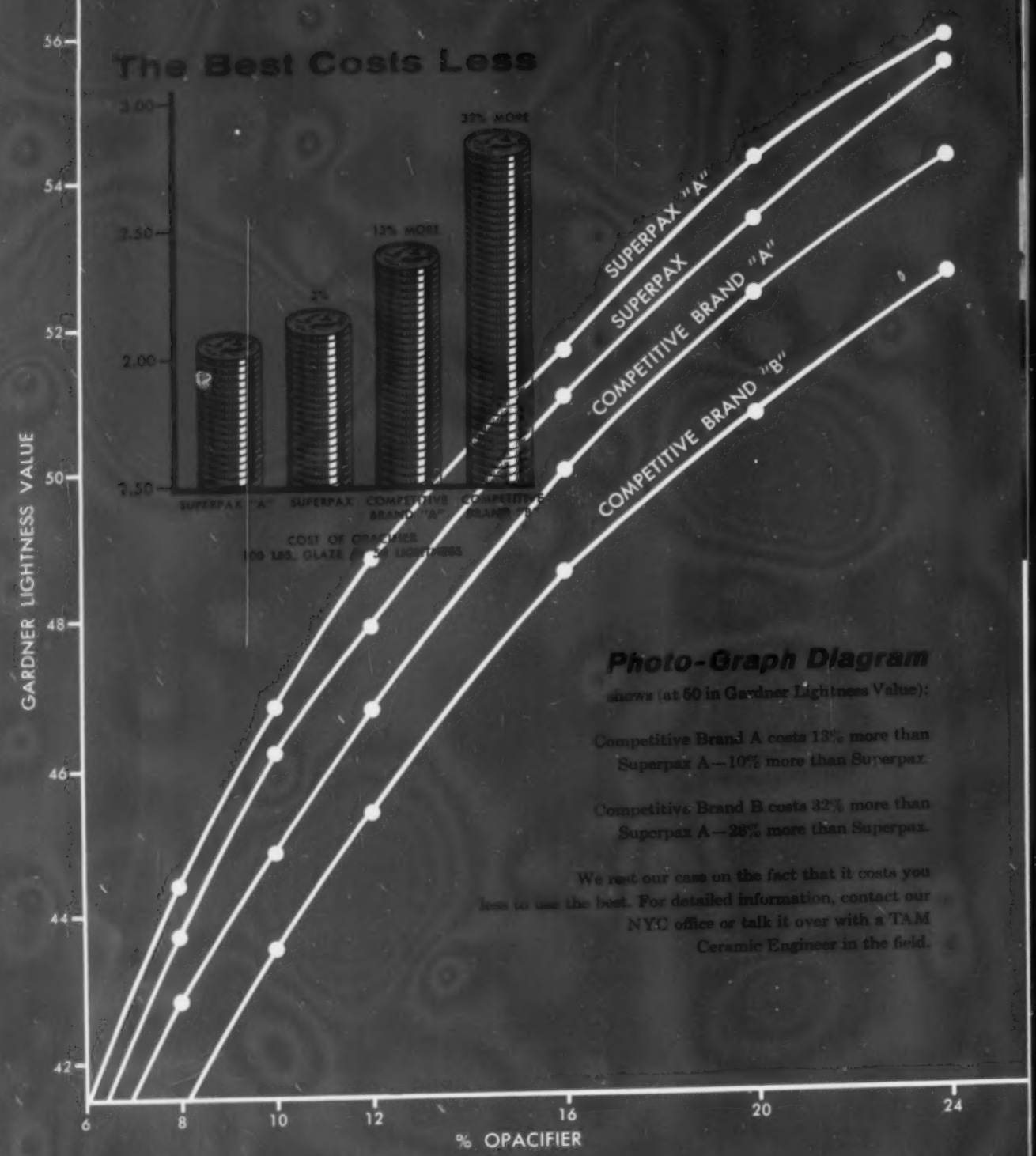

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shows (at 50 in Gardner Lightness Value):

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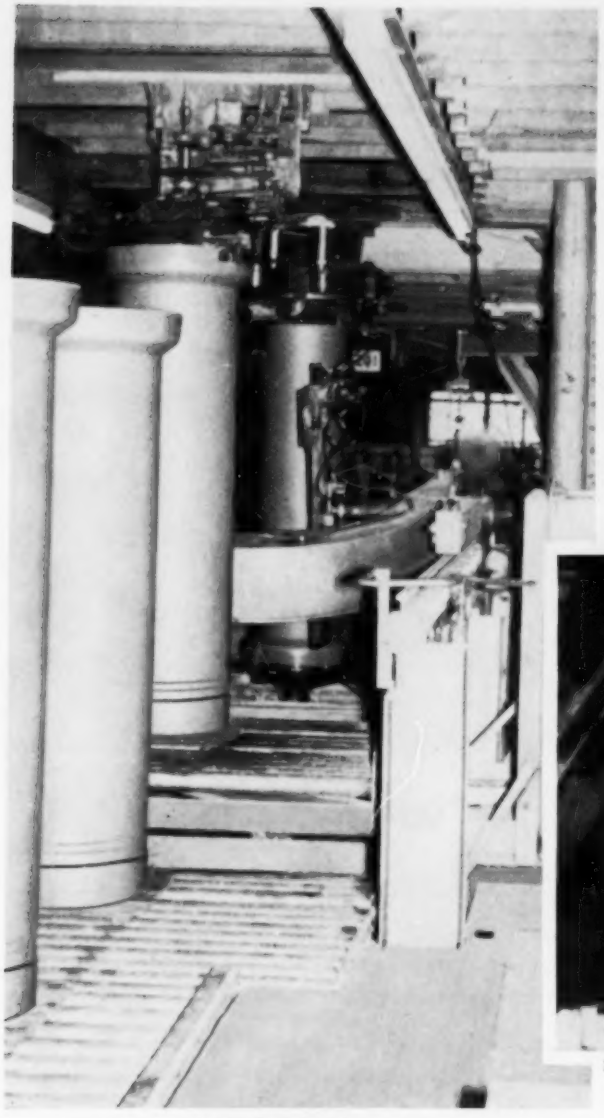
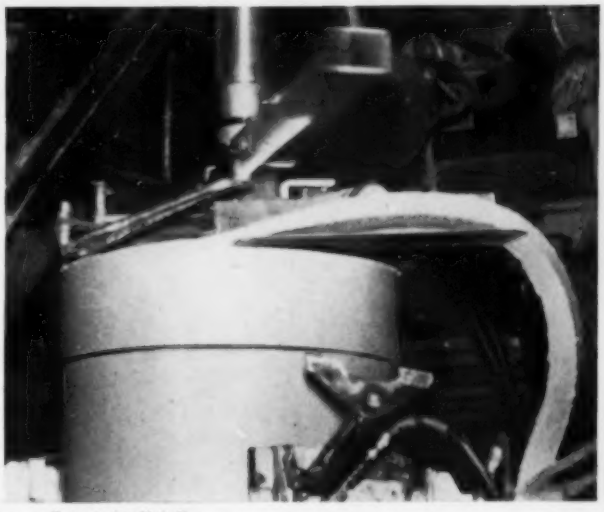


The "OCTOPUS"

Complete Automatic Production of Pipe with Drying Rings



Patent Applied For

Note low head room

1—Removes large pipe from vertical press (No socket boards required)

2—Finishes both spigot and socket ends

3—Cuts pipe to length

4—Provides drying rings

5—Automatically places pallet board

6—Turns and places pipe on drying ring and pallet board

7—Rolls finished pipe out for truck pick-up

Number of men needed for above operations .....NONE

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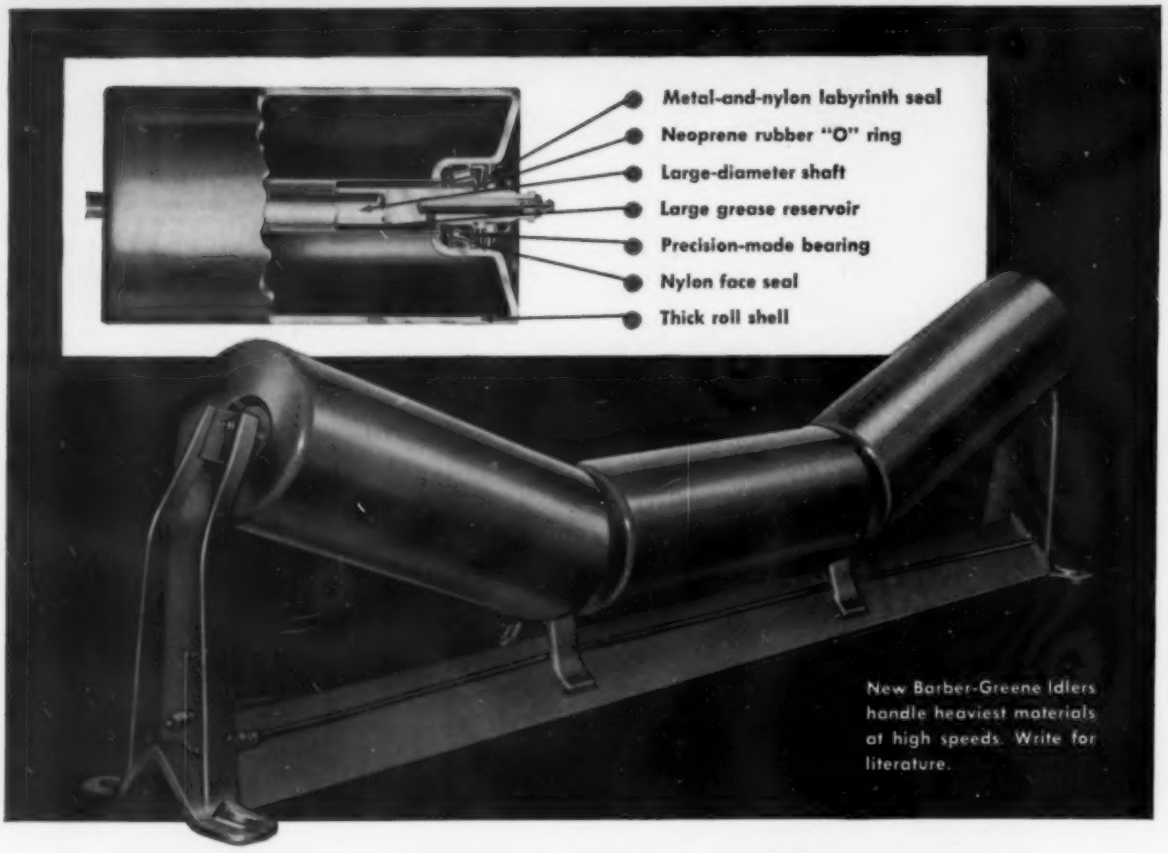
Metal-and-nylon labyrinth seal
Neoprene rubber "O" ring
Large-diameter shaft
Large grease reservoir
Precision-made bearing
Nylon face seal
Thick roll shell
New Barber-Greene Idlers handle heaviest materials at high speeds. Write for literature.

Increase idler life with these new heavy-duty Barber-Greenes

Barber-Greene's famous line of belt conveyor idlers has now been expanded to include two entirely new series of heavy-duty units. Both series offer many revolutionary design improvements that assure longer life on every job. Both are built to handle large lumps and heavy materials at high speeds. These new series include a complete range of types for every application.

Important advantages are:

Revolutionary grease seals—The combination labyrinth and face seals are the most advanced in the industry. Made of metal and nylon, they seal grease in . . . dust and dirt out, allowing long lubrication intervals and lengthening bearing life. Neoprene rubber "O" rings effectively prevent moisture from entering bearing.

Rugged end brackets—Die-formed carbon-steel end brackets, twice as strong as castings of the same thickness, are ribbed for greater rigidity.

Precision-made bearings—Tapered roller bearings are precision-made to give many thousand hours of service.

Large-diameter shafts—Shafts, made of special-accuracy cold-drawn steel, up to 1¼" in diameter. They are firmly anchored in stands by sturdy clamps and locking plates.

Virtually unbreakable stands—Jig-welded, all-steel stands maintain roll alignment despite the impact of large lumps. Heavy, inverted base angle is self-shedding. Heavy, formed steel feet up to ½" thick.

Thick roll shells—Rolls made of heavy steel tubing up to ¼" thick. Strong welds completely around roll ends assure rugged, long-life units. Roll edges ground smooth to prevent belt wear.

Large grease reservoirs—Rigidly fitted seamless steel tubing forms large grease reservoir, providing ample reserve which permits longer lubrication intervals.

59-9-1PE

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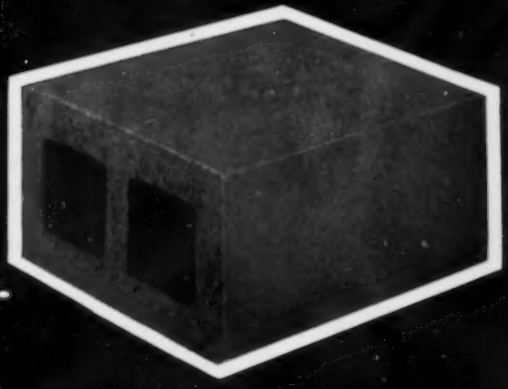

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Ohio Injector Company, maker of OIC valves, can count on heat from these Atlas Steam Generators fired with Flame King Burners

Four North American A-4120-5 *Flame-King* Burners release 4.2 million Btu per hour in each of these 3-pass packaged steam generators. Each unit is rated at 90 boiler hp but actual output is 100 hp.

Atlas Generators are completely engineered units designed and built cooperatively by Titusville Iron Works and North American Mfg. Co. They are factory assembled packaged units completely piped, wired, and trimmed so that only fuel, vent, water, steam, and electric power connections are required on the job site. Service is provided by factory-trained, experienced engineers of your local Atlas Engineering Organization.

20 high pressure and 26 low pressure models are available from 20 to 250 bhp with GAS, OIL, or DUAL-FUEL burners featuring:

1. electronic combustion safeguard
2. programmed and proved plug-proof pilot
3. hinged mounting; large observation port
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5. control cabinet with fused switches
6. FM and UL approved components

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at New York's New Washington Square Village Apartments

Mr. Paul Tishman, builder in charge of design and construction for the development, refers to the 3 million glazed bricks in this multi-million dollar apartment project at New York City's Washington Square as "3 million pieces of fine pottery"— a worthy tribute to the manufacturer, the Binghamton Brick Company, Binghamton, N. Y.

The reds, yellows, and blues used in coloring the bricks for the bright facades of these buildings were manufactured by Drakenfeld. Research at Drakenfeld makes it now possible to offer coloring materials to suit almost any brick processing set up, and coloring methods which all brick manufacturers can use. Sand colors, engobe stains, glaze stains, colored specks, and prepared glazes are available in a wide variety of colors. To help meet unusual requirements Drakenfeld research is at your service to provide a prompt, dependable solution to your brick coloring problem. Results: beautiful, vivid colors that best meet architects' demands for color in today's building construction.

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Be sure to investigate the "Buffalo" Type "BL" Fan for your Class I and II air moving jobs. Call your nearby "Buffalo" engineering representative, or write for Bulletin F-104.

"Buffalo" Fans bring you the famous "Q" Factor — the built-in QUALITY that provides trouble-free satisfaction and long life.

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DF8-3

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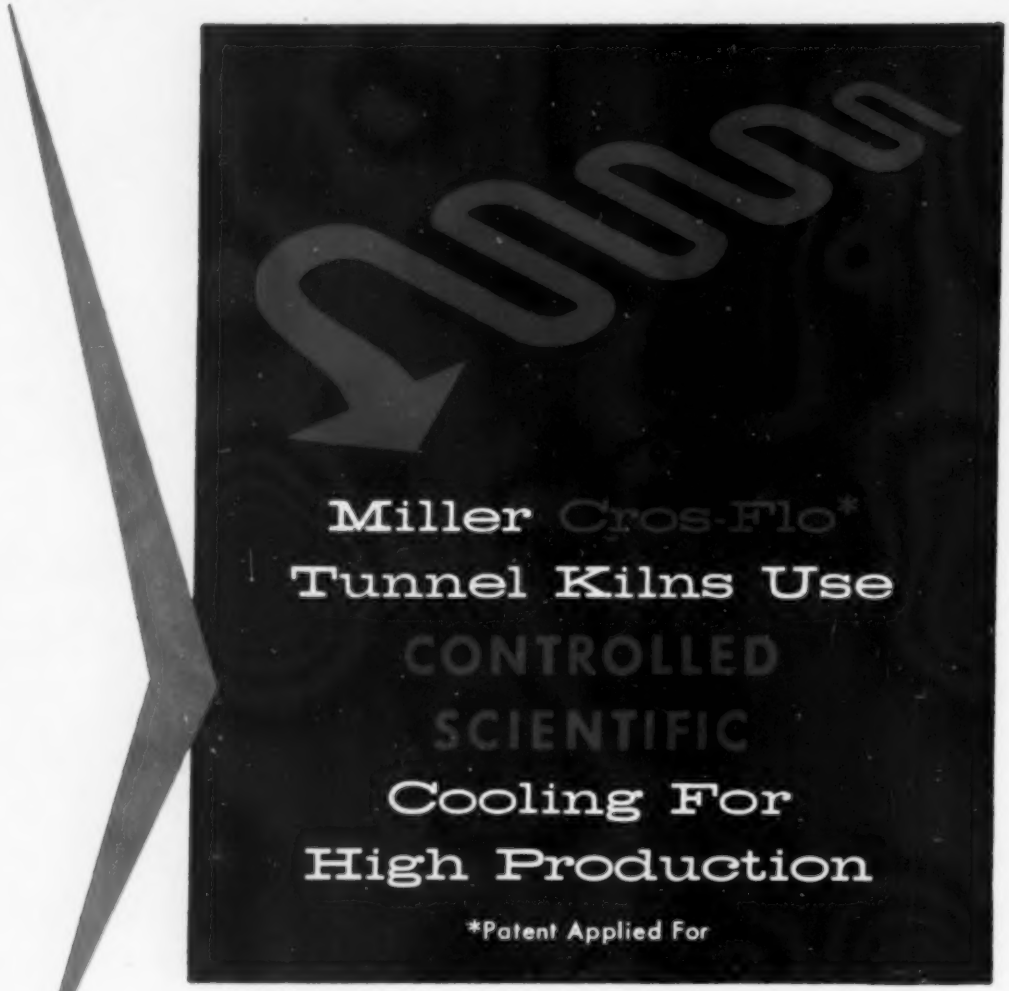

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Are You Capitalizing on Advertising?

Fairfax M. Cone, partner in one of the largest agencies in the country, Foote, Cone and Belding Advertising, and one of marketing's brightest minds recently said "Advertising is what you do when you can't send a salesman or when you don't know to whom to write to make a proposition".

This is an idea that should receive some thought by all executives and particularly by those of the heavy clay product industries. Brick and tile manufacturers have almost 10,000 architects, over 5,000 mason contractors and perhaps 10,000 general contractors to reach. Additionally there are many more assistants who must be made aware of your sales message. Are all of these people known? Can they be called on or even written?

The refractories industry must impress several thousand metal manufacturers and processors, hundreds of cement plants, oil refineries and over 3,000 ceramic plants. The prospects of the refractory salesman must number over 10,000 plants with possibly three buying influences in each plant. Are they all known? Can they be written or called on?

The same situation is true for the clay pipe industry. Considering engineers, government officials, contractors, builders, dealers, architects and developers, there must be well over 50,000 people who influence the choice of such materials. Advertising can reach a great majority of these people even though they remain uncalled on and unwritten.

Lightweight aggregate has a greater problem; it is a new material with growing uses and must do an educational job in addition to the ordinary selling job.

Cone brought out the economy of advertising and said that without doubt or question it is the "only affordable method" available to tell large numbers of people about new products and services in a sharply competitive market.

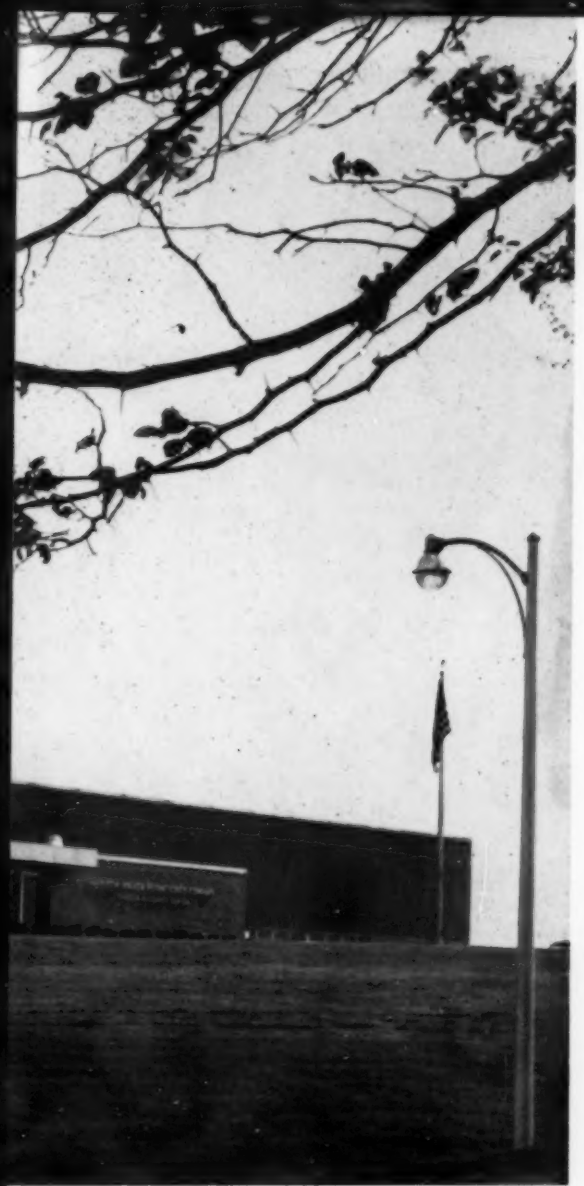
Advertising is a tool, a tool that can be used in the total marketing program of any company. If the marketing program is unbalanced, if it does not use the cheapest tools available for each phase, the total effort must suffer.

Every thinking executive will periodically examine his programs to make sure that they include his most effective tools.

Harbison-Walker Unveils Advanced Research Center

A strong public relations program and sales promotion effort was built around the public unveiling of the $2,000,000 Garber Research Center by The Harbison-Walker Refractories Co. Opened to the press on June 2 for a complete tour the center, located in West Mifflin Township near Pittsburgh, was visited by representatives of Pittsburgh, McKeesport and other local newspapers as well as people from national, financial and trade magazines.

During the following week, several hundred of the nation's research, business and educational leaders were invited to join with civic leaders in inspecting the new facilities and the newest research developments in the field of high temperature processing. The program was de-



signed to bring out the strong part that refractory research has played in the development of modern material processing and to highlight the part that Harbison-Walker has played in research.

Laboratory personnel were trained to quickly and efficiently move the visitors through the large installation. Areas of high popular interest were covered in greater detail than those of less current appeal. However the occasion was used to answer all questions of those attending. In addition to the laboratory people, the company used others from the Sales Department and Public Relations to handle the large crowds which accepted the invitation to see the installation.

The first glimpse of the laboratories reveals the clean simple lines of contemporary architecture in a pleasing combination of rectangular shapes of buff brick, polished granite, porcelain enameled aluminized steel trim. The laboratories are functionally divided into two main buildings with offices and instrumental research in one and the pilot plant for product research and development in the other. Both buildings, exterior and interior, are constructed of durable materials to provide 45,000 square feet of working area, requiring comparatively little maintenance through the years.

The reception room from which Pittsburgh's skyline may be viewed, overlooks the garden court formed by the adjoining buildings, and is furnished to complement the exterior architecture.

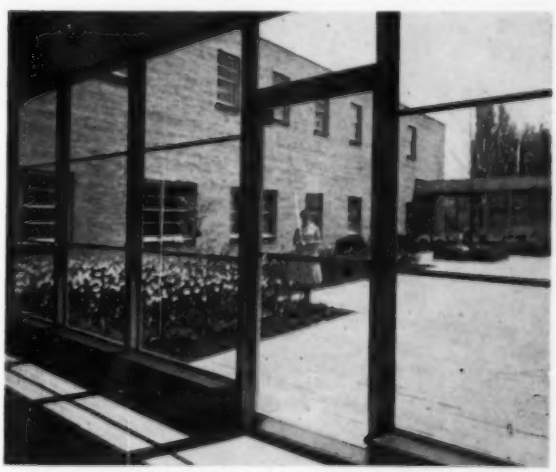
Fine Instrument Section

The building to the left of the reception area, entirely air-conditioned, contains the offices, library and conference areas, with the second floor devoted to instrumental research. The laboratory for minerals study is an important feature. An understanding of the changes which take place in refractories during their service is gained primarily through the study of the altered and new minerals of which they are composed. The minerals identification laboratories section contains petrographic equipment for studies with transmitted and reflected light, emission and x-ray spectrographs for semi-quantitative analyzes and an x-ray diffractometer for crystal or mineral identification. This section is further complemented by a well equipped analytical chemistry laboratory and photographic facilities.

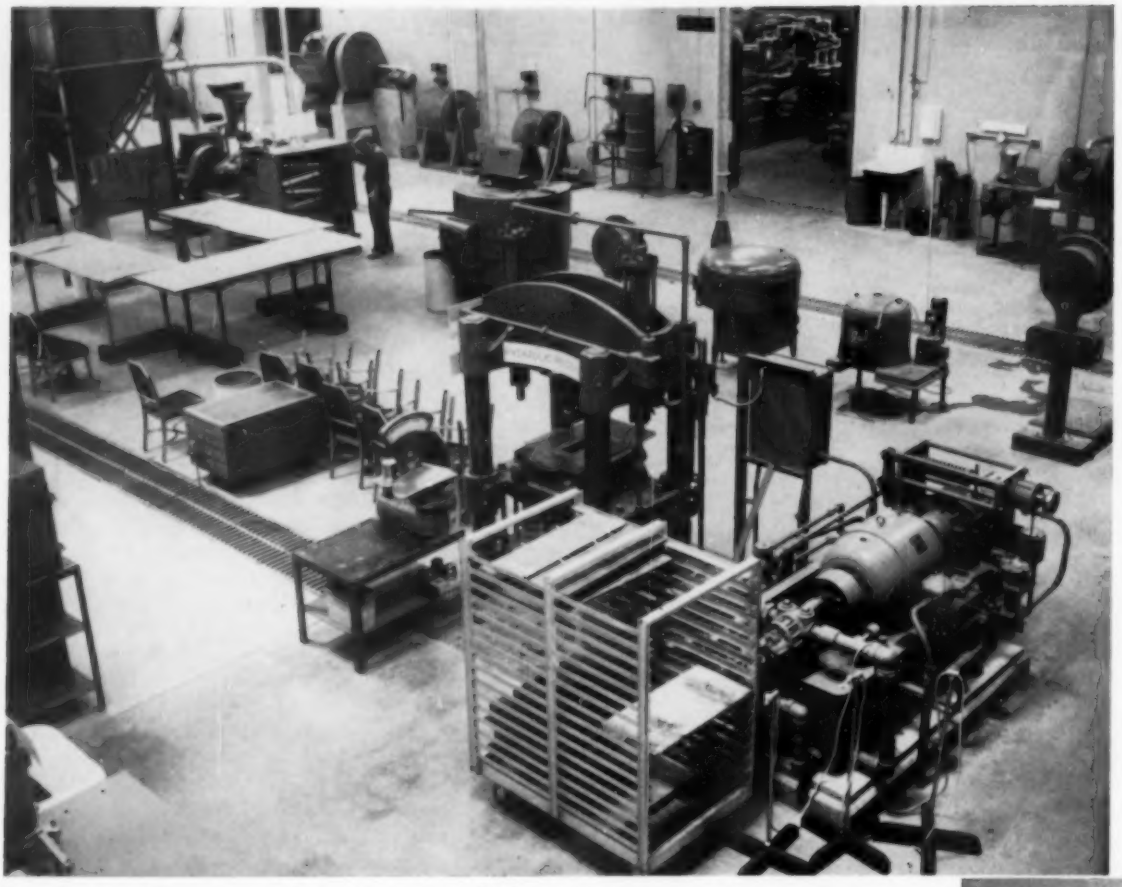
The fine instruments section also contains equipment to measure the particle size of clay-like materials and other fine powders. Three methods are employed, two elutriation techniques based on Stokes Law and a third giving average particle diameter based on surface area. Other specialized equipment for measuring such physical properties as thermal expansion and thermal conductivity of refractories is located in this section.

The pilot plant building located to the right of the reception area contains all equipment associated with the manufacturing of refractories. A complete line of crushing and grinding, screening and mixing equipment supports the various forming techniques of pressing, extruding, ramming, gunning, and casting. Pressing techniques are highlighted by the 300 ton hy-

Continued on page 44



Open court has been landscaped with flowers and shrubs and serves the vital purpose of separating fine instrument section from the pilot plant section of the laboratory.



Pilot plant section of research center is completely equipped with all types of grinding, screening, mixing and forming equipment. Any plant process can be duplicated in the center.

draulic press and the pneumatic impact press, the latter a technique developed by Harbison-Walker. This area contains normal drying equipment supplemented by a completely instrumented humidity chamber.

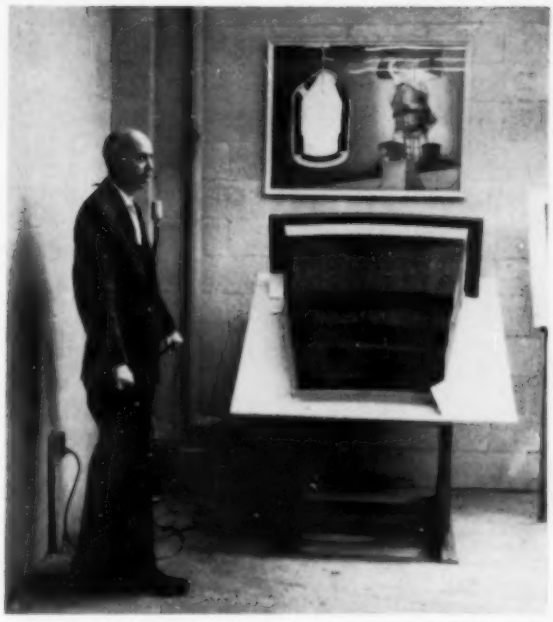
The kiln area for heating and testing refractories is divided into an electric furnace room and a gas-fired furnace area. The former features such specialized equipment as a furnace specifically designed to investigate the effect of molten aluminum on refractories, others for measuring the high temperature load-bearing ability of refractories, and for measuring the high temperature strength of refractories. All electric furnaces are automatically controlled using the latest instrumentation.

The gas-fired kiln area contains many reheat or test kilns, some of which are capable of attaining temperatures as high as 3500°F, far in excess of the maximum attained in most industrial furnaces. This area also features such ASTM tests as panel spalling and load test. Here again the latest in instrumentation was used to insure complete control of all research testing.

Product Development Labs

The pilot plant area also contains several very specialized product development laboratories. One laboratory

H-W took advantage of the open house to explain the use of their products in the field to their guests. Here Ben Davies, answers questions about a half size section of an open hearth steel furnace that was built in the laboratory to illustrate the application of several of the Company's products.



G. R. Henry explained the use of tar bonded dolomite refractories for the growing oxygen converter process. Typical service life was stated to be seven or eight days in this technique of making steel.

is devoted entirely to the development of refractory mortars, another to castables and monoliths, and still a third to small scale studies or bench scale operations. These laboratories are air-conditioned and contain equipment that is specific to the products and materials studied.

Adjoining the pilot plant area, are sections devoted to making many of the more routine physical tests on refractories. Such tests include transverse strength, compression testing, abrasion resistance and the measurement of permeability or the rate at which furnace gases will penetrate a refractory material. Other such common test facilities as those for density, apparent porosity and bulk specific gravity are located in this area.

Other facilities include a machine shop for maintenance and the construction of specialized equipment, a large raw materials storage area and light spacious lunch room facilities.

Site Beauty Retained

The twenty-one acre property on which the Research Center was built, represents two separate tracts, one of meadow and woods, and one of landscaped estate. Preservation of their natural beauty was constantly kept in mind, so that the views in every direction are among the best to be had in south western Pennsylvania. Particularly prized are the untouched woods which are viewed across wide lawns from the reception room, and the aged crab apple trees at the front of the fine instruments building.

Undoubtedly the most striking feature is an enclosed courtyard between the two major buildings. Laboratory

Continued on page 46

Employees of Harbison-Walker, such as those pictured above, took time off from their normal duties to act as hosts and guides during the recent lab open house. Partial list of these people includes: R. K. Scott, C. B. Clark, E. Ruh, G. R. Henry, B. E. Wishon, F. H. Walther, W. E. Nary, E. T. Hile, D. F. Stock, A. L. Renkey, L. E. Oberschmidt, A. G. Demartino, R. S. Beals, B. Davies, D. F. King, C. H. Schweinberg, H. S. Schweinberg, and F. P. Shonkwiler.

designers feel that it is essential to separate buildings which house delicate equipment from those which contain heavy vibration-producing machines; in this instance a feature of beauty was created by converting the separating area into a handsome courtyard. While its patio areas are a striking feature, most interest is focused on the plantings of shrubs, trees, and flowering bulbs. The two larger trees, in boxes, are a sweetgum and a moraine locust. Shrubs include rhododendrons, azaleas, evonymus, pyracantha, yews and ilex. Hundreds of tulips, narcissus, and hyacinths bloom among the plantings of pachysandra, to be followed by other blooms as the seasons change.

Both areas are paved with refractory silica brick permeability to water is a puzzling scientific phenomenon. The only departure from silica brick paving on the entrance promenade and patio is a small area made of the same refractory castable as used successfully for the launching of the satellite Explorer I, and numerous other rockets at Cape Canaveral, Florida.

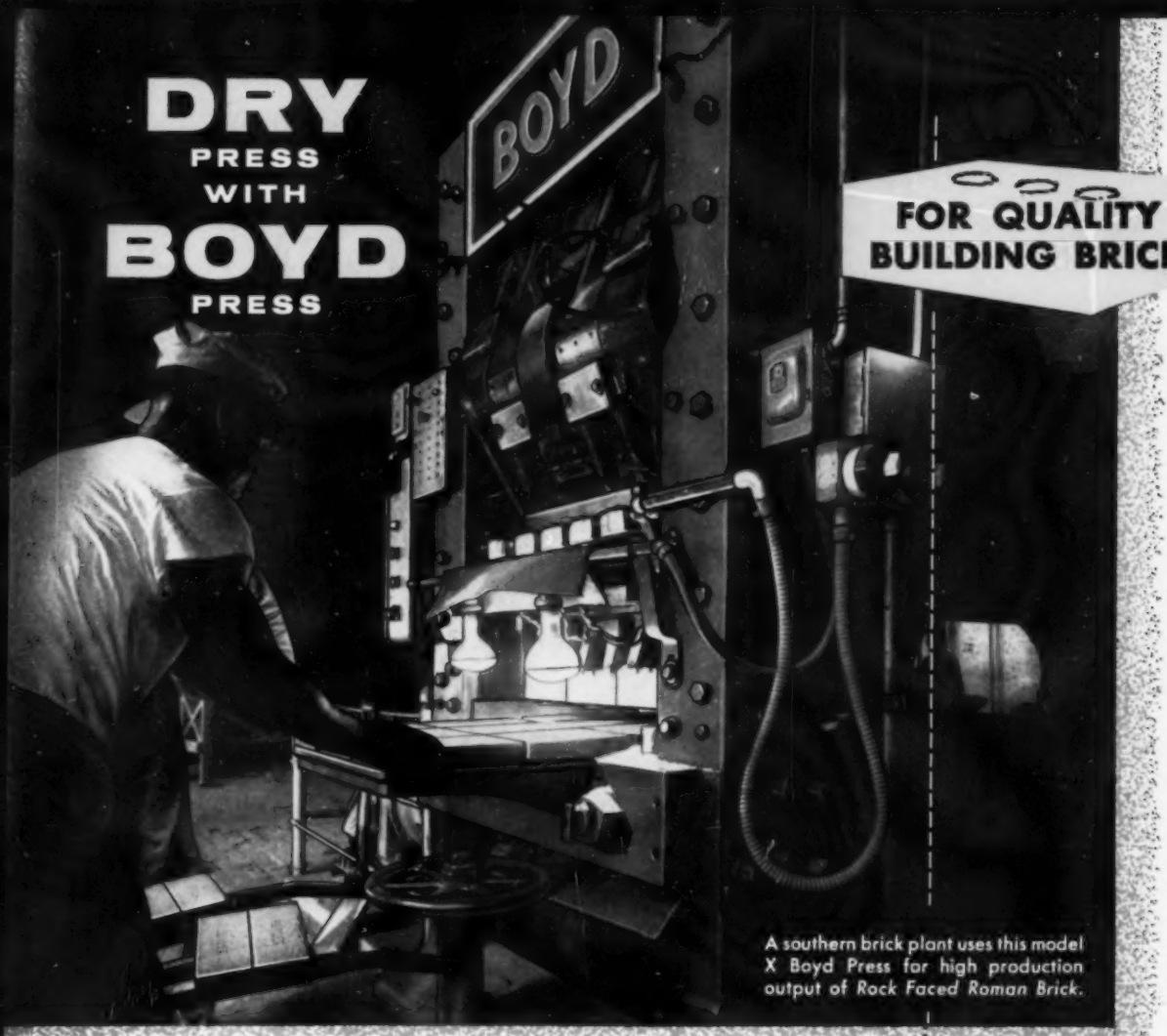
Mr. Raymond E. Birch is Director of Research. The management group on the site of the Garber Research Center is headed by Mr. Donald F. Stock, Laboratory Manager, and Dr. Edwin Ruh, Assistant Director of Research. Dr. Ruh directly supervises the instrumental research groups. Mr. Donald F. King is Assistant Laboratory Manager, and in charge of sales service projects.

The staff consists of engineers and scientists having various backgrounds, with ceramic engineers predominating. These are supported by about an equal number of skilled technicians.

The research activities are divisionalized in keeping with H-W's highly diversified business. One important staff group is concerned only with basic refractories (those made of chrome ore, dead burned magnesite, dolomite and olivine, etc.). Having developed the highly successful basic open hearth roof brick, H-W Metalkase 29-57 XXP, which is widely influencing the economy of open hearth steelmaking, they are now studying further

Continued on page 64

DRY PRESS WITH BOYD PRESS



A southern brick plant uses this model X Boyd Press for high production output of *Rock Faced Roman Brick.*

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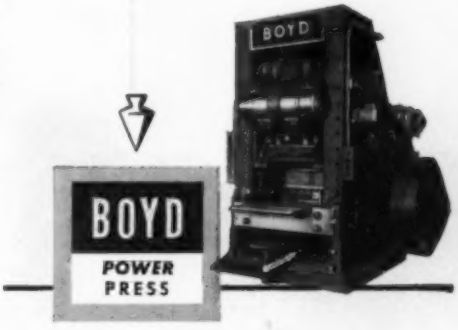

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Report . . .

How Plant Applied Silicones Affect Wall Strengths

BY
B. C. CARLSON
&
WILLIAM D. BETTS
DOW CORNING CORPORATION

In the Silaneal® treatment, (described in the July, 1958 issue of BRICK AND CLAY RECORD) brick are treated with a dilute sodium siliconate solution by the manufacturer. By reducing the water absorption of the brick, this treatment eliminates most efflorescence and dirt pickup. Treated brick need no soaking before lay-up, are easier to place, and result in cleaner walls.

Since earlier water repellent treatments were applied only to the exposed surfaces of finished brick walls, little attention to their effect on bond strength was necessary. But the Silaneal treatment, particularly when applied by the dip method, affects the bedding surfaces as well. And the bond between brick and mortar "is largely influenced by the battle between the brick's capacity to absorb water and the mortar's ability to retain it for proper hydration at the interface."* Since the Silaneal treatment reduces absorption from the mortar, its effect on bond strength required study.

Early couplet tests at Dow Corning indicated that the treatment actually improved bond strength. In reviewing these tests, the Structural Clay Products Research Foundation suggested that full scale wall tests were needed to confirm these results. In November, 1958, Dow Corning began an extensive wall testing program. The procedures used for building and testing the walls were the ones recommended by the Foundation. This article is a description of the test program and a report of the results.

Test Facilities

Because winter was approaching when the test program began, a heated warehouse was leased for the tests. All walls were built, aged and tested in this warehouse at temperatures between 70 and 75°F.

The wall strength tester was patterned after the one used by SCPRF. Their design was modified to permit testing single course walls of standard 4-inch brick, as well as those of 6-inch "SCR brick"®.

Very briefly, the wall strength tester is designed to restrain a wall near the top and bottom and to apply a uniform transverse load to the face of the wall. Gauges are attached to measure deflection of the wall's midpoint. The uniform load is increased by increments until the wall fails. At least three walls were tested at each concentration of Silaneal 772 to obtain an average value.

Types of Brick Tested

In order to learn the effect of the treatment on a variety of brick, seven types differing widely in absorption and suction rate were selected. The first four brick (A, B, C, and D) were highly absorptive, and high suction rates, and included some of the most widely used types of American brick. Brick E was an "SCR brick" having moderate absorption and suction rates. Bricks F and G had low absorption (six per cent or less) and low suction rates. All bricks were of standard 2¼ x 3¾ x 8 inch size except the "SCR brick", which measured 2-1/16 x 5½ x 11½ inches.

Preliminary Absorption Tests

A series of absorption studies were first carried out in the laboratory to find the appropriate Silaneal concentrations for the wall tests. These tests were also intended to help correlate wall strength results with the extent of benefit to be obtained from Silaneal treatment. A short description of each test follows.

1. **Suction Rate,** also known as Initial Rate of Absorption, measures the water absorbed where a brick having 30 square inches of bedding area is placed in ⅛ inch of water for one minute.
2. **Quarter Inch Absorption**‡ measures the percent water absorbed in 24 hours by a brick placed bedding-side-down in ¼ inch of water. This test is believed a better indication of the absorption of wind-driven rain into above-grade masonry (where hydrostatic head is not a problem) than is the immersion-type Cold Water Absorption test specified in ASTM C67-57.
3. **Saturation Coefficient,** or C/B Ratio, is the ratio of Cold Water Absorption to Boil Test Absorption of (ASTM C67-57). A coefficient of less than 0.78 in this test is considered necessary by ASTM for all-weather brick.
4. **Efflorescence** is obtained by placing bricks bedding-side-down in ½ inch of a ten percent sodium sulfate solution. Results are expressed as the percent of the brick's upper surface that is covered with sulfate salts after eight

*C. B. Monk, Jr., Transverse Tests of Masonry Walls, Special Technical Publication No. 166, American Society for Testing Materials, 1954.

*For a standard sized brick having 30 square inches of bedding area; values for "SCR brick" have been adjusted to be comparable.
†F. C. Anderegg, *ASTM Bulletin No. 156*, p. 71 (1949) and *No. 171*, p. 48 (1951)

days. This accelerated test is a very severe one, and bricks that showed a slight bloom in this test may nevertheless remain free of efflorescence in actual service.

The results of these laboratory tests indicate that concentrations of 4 to 8 parts by volume per 1000 parts water were suitable for bricks A, B, C, and D. Treatment at these concentrations reduced the suction rate to a fraction of its original value, cut absorption in half, and eliminated most efflorescence. Saturation coefficients also were decreased substantially. Further research is necessary to determine the effect of this reduction in C/B Ratio on weathering and spalling properties of treated clay units. With these results in mind, concentrations of 0, 2, 4, and 8 parts Silaneal 772 per 1000 parts water were chosen for treatment of bricks A, B, C, and D for use in test walls.

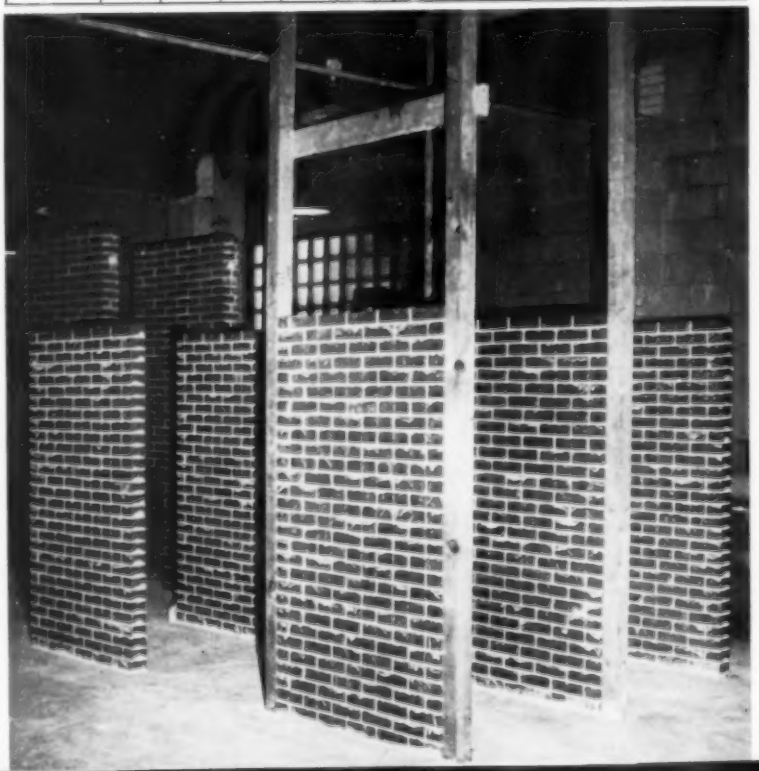
Laboratory results on brick E and F, on the other hand, showed that similar reductions in suction rate and efflorescence were obtained at treating concentrations of only 1 to 2 parts per 1000 parts water. Wall tests on these bricks were therefore carried out at concentrations of 0, 1, 2, and 4 parts per 1000. Although the properties of Brick G are such that treatment to reduce absorption is unnecessary, tests were carried out at these same concentrations for comparative purposes.

TABLE I
RESULTS OF LABORATORY TESTS

Brick Designation By Type and Cold Water Absorption (ASTM C67-57)	Dilution Ratio Silaneal 772 to Water	Suction Rate gms./min. per 30 in.^{2}	Quarter Inch Absorption (%)	Saturation Coefficient C/B Ratio	Efflorescence % in eight days	WALL LOAD AT RUPTURE (Pounds per Square Foot)
						20 40 60 80 100
A Soft Mud 21%	0 (Soaked before layup)			–	–	43
	0 (Dry)	51.0	21.0	0.96	98	27
	2:1000	4.6	19.2	0.91	0	34
	4:1000	4.1	16.4	0.78	0	39
	8:0000	1.5	9.1	0.70	0	36
B Soft Mud 18.9%	0 (Soaked before layup)			–	–	53
	0 (Dry)	77.8	19.0	0.94	100	33
	2:1000	46.2	14.7	0.87	15	34
	4:1000	28.1	12.7	0.71	5	44
	8:1000	9.1	7.6	0.60	0	42
C Extruded 14.5%	0 (Soaked before layup)			–	–	47
	0 (Dry)	43.3	16.5	0.84	95	26
	2:1000	21.4	12.3	0.85	50	40
	4:1000	10.8	11.6	0.70	30	34
	8:1000	2.6	9.7	0.63	0	34
D Dry Press 14.5%	0 (Soaked before layup)			–	–	62
	0 (Dry)	148.0	13.5	0.87	100	53
	2:1000	21.0	7.6	0.53	0	75
	4:1000	4.4	0.3	0.05	0	90
	8:1000	3.6	0.2	0.04	0	81
E Extruded 6.7%	0 (Dry)	26.6	6.0	0.86	100	63
	1:1000	11.0	5.4	0.81	5	78
	2:1000	6.6	5.9	0.81	0	83
	4:1000	3.7	4.6	0.72	0	78
F Extruded 6.0%	0 (Dry)	15.0	6.9	0.98	12	87
	1:1000	8.4	6.3	0.93	5	84
	2:1000	4.3	6.4	0.98	0	77
	4:1000	1.2	4.5	0.91	0	62
G Extruded 2.0%	0 (Dry)	4.2	2.6	0.75	0	63
	1:1000	3.8	2.0	0.70	0	51
	2:1000	1.8	1.4	0.68	0	48
	4:1000	1.6	0.5	0.19	0	38

Preparing Test Walls

Brick to be used in test walls (and in the laboratory tests already discussed) were obtained directly from the manufacturers. They were delivered in covered trucks as fresh from the kiln as possible in order to approximate in-plant treatment. The bricks were piled on pallets 180 at a time, and the pallets immersed in a tank at the proper concentration for a period of 2½ minutes (2 minutes for brick E). The pallet loads were allowed to cure at least overnight before the brick were made into test walls.



A heated warehouse was used to protect 101 test panels from extremes of temperature during the life of the test program. SCR brick panels were built two feet higher to compensate for the greater width.

A total of 101 walls were tested in this program. All walls were built by the same journeyman mason to insure uniformity of workmanship. The walls were 4 feet wide by 6.5 feet high, except for the "SCR brick" walls which were 9 feet high to compensate for their greater depth. The walls were laid up between story poles for rapid and accurate construction (Figure 3). The first course was constructed on building paper to prevent adhesion to the floor of the building. The mortar proportions were 1:1:6 (cement:lime:sand, by volume); the ingredients for each batch were accurately weighed and combined by the same helper as an additional measure of uniformity. Full bed mortar joints were used in all wall construction.

Build Three Walls

A minimum of three walls were constructed from each type of brick treated with each Silaneal concentration. Three walls of untreated brick of each type were also built. And since bricks A, B, C, and D were highly absorptive types that would sometimes be wetted on the job to reduce suction rate, walls were built from wet bricks of these types in an effort to find the highest strengths that could be obtained by wet layup. This was done by soaking them for an experimentally determined time (different for each type of brick) that in the opinion of the mason resulted in the best suction rate and handling qualities. Only enough brick for one hour's work were soaked at one time.

Comments of the mason while laying up the walls were recorded. In his opinion the treatment improved the handling and laying qualities of all seven types of brick. In most instances the concentration that he thought made layup easiest proved to be the concentration resulting in highest wall strength. The mason also found that complete walls could be built from treated brick without stopping to strike the joints; construction of walls laid up dry from untreated high-absorption brick had to be stopped as many as four times for this purpose. Finally, the walls made from treated brick were significantly

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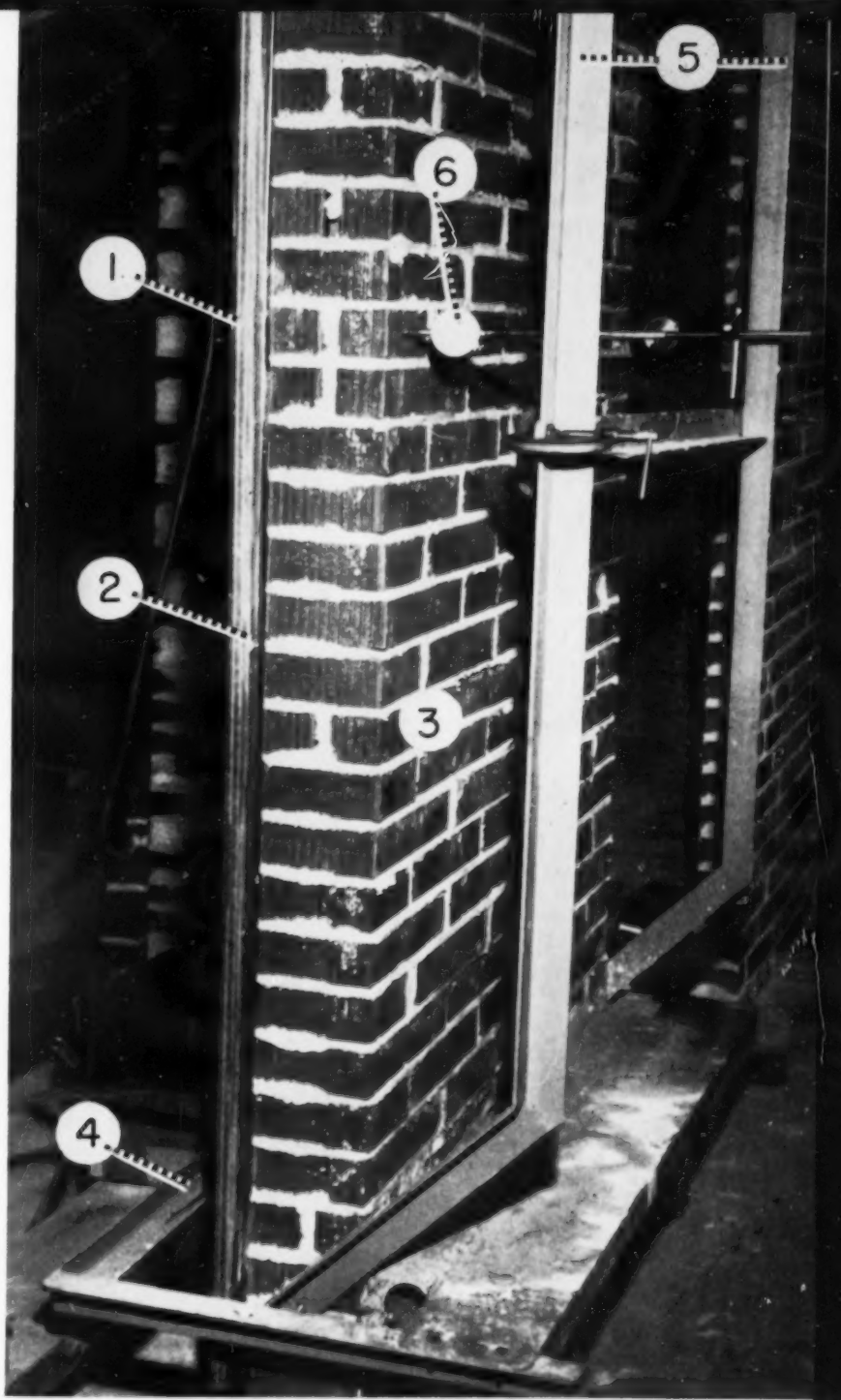


Test Equipment consists of a castor-mounted frame of I-Beams and angle iron to which a vertical sheet of plywood (1) is bolted. Attached to the plywood is a sealed bag of heavy polyethylene (2), into which air is pumped to apply a uniform transverse pressure against the wall (3). Reaction arms (4) circle the wall near the top and bottom, restraining movement at these points. Deflection support arms (5) which are attached directly to the sides of the brick wall in the same planes as the reaction arms are not in contact with the rest of the equipment, support the deflection gauges (6). The equipment is shown as it is used to test 9-foot walls of "SCR brick"; when testing the smaller (6.5-foot) walls a shorter polyethylene bag, shorter deflection support arms, and a lower position for the upper reaction arm were used.

Rebuilding Decision Pays off for Montezuma . . .

Indiana Company Switches to Buff Brick

Clay City Pipe Co., a few years ago, was face-to-face with a decision that was to either close down their #3 plant at Montezuma, Ind., or to rebuild the plant and diversify production. The decision made was to rebuild as much as the budget would allow and to go into production of buff brick, using purchased clay.

The decision to rebuild was based heavily on the availability of gas, which was put in in 1954 to replace coal-firing. In the comparatively brief time since then, the company has done such work as paving the yard, rebuilding kilns, putting up new dryer and storage sheds, going to fork truck handling and has further plans.

Today, with Bill Conaway as plant manager and sales manager, Montezuma is doing a brisk business with buff brick accounting for 65% of the business. The remainder of the business is in a medium-grade fire brick which used to be the main product. Conaway believes that the good-looking line of buff brick will eventually heavily dominate output.

Buys Clay

The clay used is bought from Love Bros. Clay of Brazil and Indiana Clay Sales also of Brazil. All of the clay is trucked in. A new metal-roof storage shed, 52′ x 60′, is used primarily for winter and bad weather storage. Two bins are used for the two products with one holding 75 tons, the other new one holding 140 tons.

Clay is fed into a relatively new Meco crusher that was transferred from the parent Uhrichsville plant. In a brief rundown of production set-up, the company uses a Stevenson 9′ dry pan for grinding, feeding the clay over a Universal heated 3 x 6′ screen that Conaway says does a wonderful job. A portable conveyor is used to transfer ground material to either of the bins.

Two Pugs Used

Syntron feeders move the material then into one of two pug mills. An American is used for the buff brick, and a Bonnot Challenger for fire brick. The company has one American and one Chambers cutter.

The brick are hacked in 491 brick packages and taken by fork truck to storage for the dryers. Montezuma has 8 steam heated dryer tunnels, each 91′ long, with a packaged boiler setup, powered by 50 hp, using automatic controls. Conaway is pretty well satisfied with his drying arrangement.

Moved by fork to the kilns, the brick are actually only handled twice by hand. All of the kilns, six total, are 38′, using Montezuma's own burners, with solid floors with 24″ x 24″ openings in the center.

Kilns Rebuilt

Several of the kilns have rebuilt walls, and some new crowns have been built. Conaway rebuilt one more kiln this past summer.

The brick are set in the kiln in packages three cubes high, for an average firing of 50,000 brick. The loading pattern was worked out by Montezuma. Following firing, the brick go, again by fork truck, to the brand-new storage shed, completely cemented, that's about 52 x 210′. The plant is situated in a hilly area starting up from a river valley. Conaway says that to get room for the new shed and other work, most of a hill had to be removed.

In addition to the other buildings, Montezuma has constructed a new 20 x 40′ truck maintenance garage. The company has grown from use of only one tractor to the present five, and 12 tandem trailers.

Also new, and very attractive, is the office building perched on a hill overlooking the plant. Montezuma's buff brick was used in the double wall cavity office which is 18 x 36′.

Package handling by 3 Hyster fork trucks with Bickerstaff attachments has been used since 1955. Handling overall is pretty well mechanized, with Roura dump hoppers used for handling scrap, sand, etc.

Yearly output of the plant is running between 8 and 10 million, with about 6 million in the buff. The buff brick, in production since 1954, has ben growing fast in sales, eclipsing the former low-duty fire brick made. Employment is about 25, with installation of gas cutting about 10 men from the crew.

Plans Still More

Bill Conaway has other plans for Montezuma, as soon as time and budget allow. For one thing, he'd like to replace the stacks now used with Robinson Hi-Draft equipment, equipment that's commonly used in that immediate part of Indiana. He also has hopes of getting a tunnel kiln whenever feasible. Till then, he plans to keep working and re-working his operation to increase efficiency and moderness.

Garage in foreground was built to maintain the company's fleet of trucks and trailers. Large hill was leveled to allow room for the expansion.

Over 10,000 square feet of covered storage were added in the plant's modernization program. Buff brick now being made are more susceptible to dirt damage than former products.

Plant Manager Bill Conaway examines brick as set in kilns ready for firing. Fork truck setting and drawing has reduced damage due to excessive handling.

New office at Montezuma was built using cavity wall construction and the latest buff brick being produced at the plant.

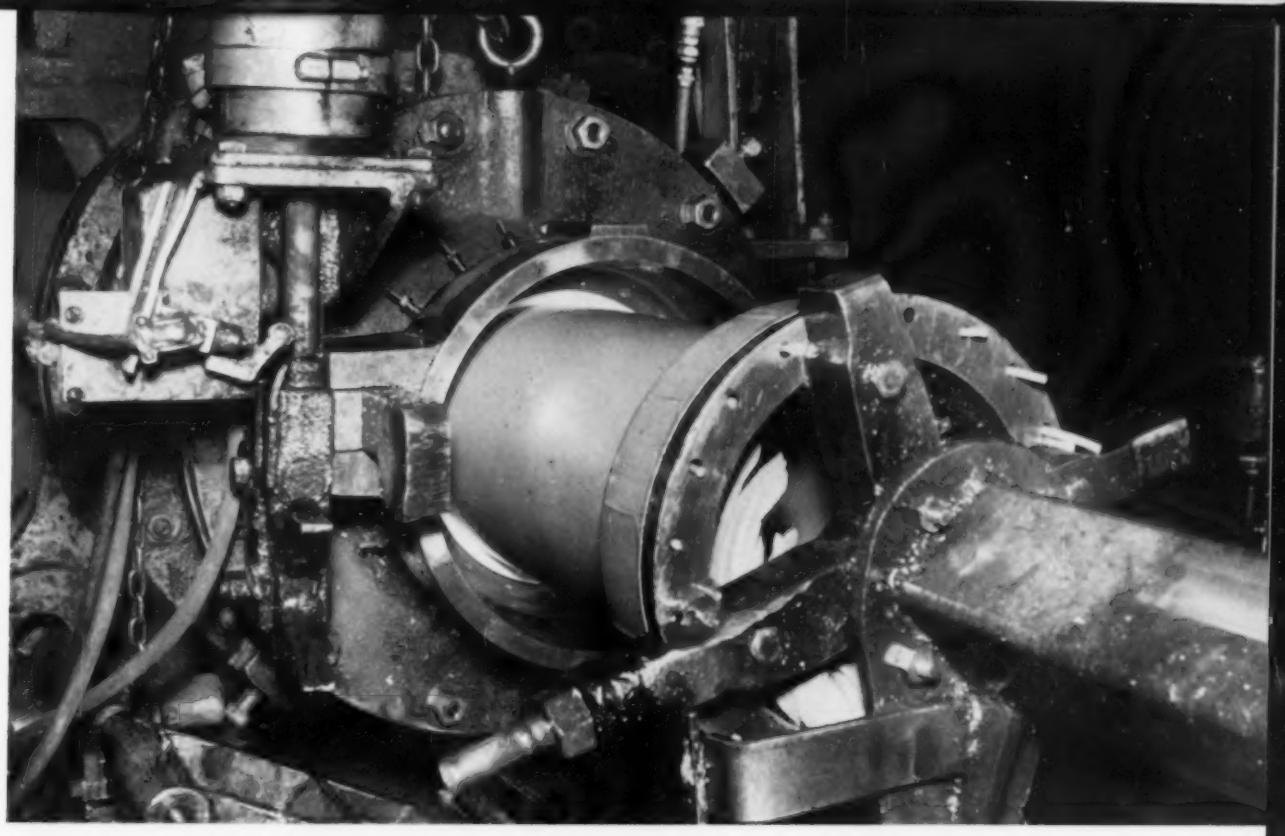
Maintenance superintendent, R. N. Thompson (left) and Harold Emerick check the ceramic die and bell liner for 4" pipe.

Denver Brick Setting Die Life Record with New Ceramic Lining

Over 400,000 feet or more than 75 miles of 8" sewer pipe is the expected output from a new pipe die and bell liner made of Coors high alumina ceramic, now being used by the Denver Brick and Pipe Co., Denver, Colorado.

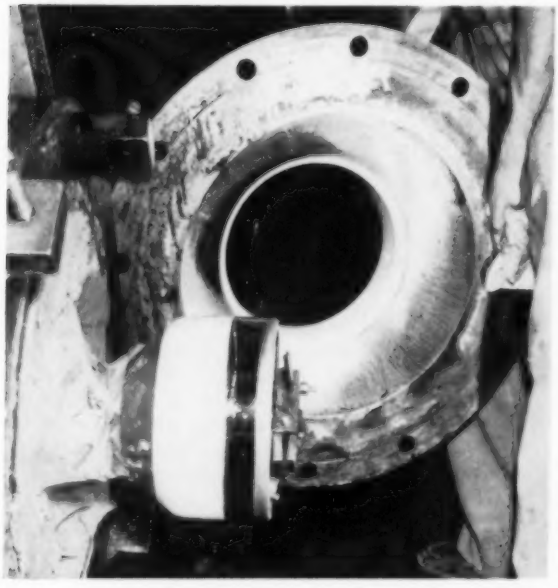
R. N. Thompson, maintenance superintendent of the Denver firm, stated that, "Even though we have reduced allowable die wear 50%, we still expect these new dies to last 10 to 17 times longer than any of the dies we formerly used. This is according to the rate of wear established from the 80,000 4-ft. lengths of pipe already made. Also, because the wall thickness has remained uniform," he said, "we will save approximately 140 cubic yards of clay between die liner changes. All indications are that the wall of the pipe should continue to remain smooth for over 100,000 lengths; and the wall thickness should remain well within the close tolerances demanded by our new plastic joints. We use a J. C. Steele Machine, extruding a dry and abrasive clay."

"Extrusion dies have always presented a problem to pipe and brick manufacturers. As production has stepped up, the problems have compounded, not only in the



Unretouched photograph, showing smoothness of pipe skin even after 320,000 feet of 8" pipe had been extruded through the ceramic die.

actual wear of the dies themselves, but also in the rapid loss of pipe quality caused by this wear. Our plant production manager, Harold Emerick, decided to do something about it," Thompson explained.



Close-up of ceramic die. After 80,000 lengths of pipe, wear at die entrance was only .055" and at die exit only .008".

"About six months ago, we went to the Coors Porcelain Co. in Golden, Colorado, with the problem. There, we found Coors already using ceramic dies that they had made for their own pug mills. These pug mills were used to de-air various ceramic bodies—material considerably more abrasive than the clays we were using. We worked with engineers in designing a liner made of their AD-85 (85% alumina ceramic) material for replacement of the conventional steel and cast iron liners we were then using on our 8" dies."

On January 18, 1959, Coors completed two sets of dies, and one set was installed on January 22, 1959.

Makes Micrometer Check

After 36,000 pieces of 8" by 4 ft. pipe had been made, Thompson made a micrometer check. At the die entrance he found that wear was only .033". At the die exit, wear was .008". The die proved to be only .001" out-of-round, and the bell liner showed only .002" over-all wear. Thompson noted that there were no streaks or lines in the sides of the pipe, and indication that the die was wearing smoothly and evenly.

"As of May 8, 1959, we had produced a total of 80,000 pieces of saleable 8" diameter pipe," he said. "We found that there had been no significant increase in the weight of the pipe since the ceramic dies were installed. A micrometer check showed only .055" wear at the die entrance, and wear at the exit remained .008".

Continued on page 66

Another Clay Block Report:

Dry Pressing and Clay Block Production

By
Bob Poole
Chisholm, Boyd & White
Chicago, Illinois

Two years ago my company became increasingly aware of the potential of clay bonded block. It was decided that we would conduct a series of tests to determine how we might fit into such a development.

We had no prejudices, but we got in touch with some of the people in the brick industry and asked them for a design for a block that would work on our particular press. They gave us the necessary dimensions. I would like to bring to your attention the fact that we took a different approach than had been done in the past. We wanted to come up with something that was a little closer to the four to one ratio that exisits in the present day standard building brick that most people have accepted as having good proportions design wise. We wanted a face type unit.

That is one of the reasons why we came up with this particular style of block. This is a half block size or 8 x 4 x 16. In this block we have allowed for a reduction of ⅓ of its volume in coring. Now we can make this with a 50% reduction and any weights that I give here could be reduced accordingly. The continuity of size proportions can be illustrated by considering the face size of the standard brick with that of the "SCR Brick" and of the block that we have adopted for our experiments.

The first problem we ran into was actually pressing the block. We got a lot of material from the various clay brick manufacturers and it was pressed with out any additional treatment. The results ran from medium to poor, the big problem being that just about everyone sending us raw clay was sending us material ready for the pug mill and auger machine. It did not have the grain size and variation of grain size that is really needed to press a block this big on the Boyd Press. Then we took a page from the refractory industry which has been using grog in their its for many years. The grog that the refractory industry uses consists of either ground brick bats or calcined clay of one sort or another. It will vary in quantity from 10% grog to 80% grog. About the time that we came to the conclusion that an aggregate or grog would help our problems, Material Service opened a new light weight aggregate plant in the Chicago area and hearing of this we bought some of their material for use in our program.

Uses Medium Size

The material we used, to a considerable extent, is their "medium" size. We tried the heavier mix but did not care for the appearance of the resulting block. We found a lot of it collecting toward the surface and along the edges and it gave a rather rough texture. There has been no work done with the fines. It has not been rejected and it is possible that it would be very useful.

Next we had to determine what percentage or mix that we were going to use. We wanted steps running from 10% grog or lightweight aggregate and 90% raw clay to the extreme opposite, or just bonding clay with moisture. Using 90% Materialite and 10% clay we could press a block, but we needed a girl with a very delicate touch to get it out of the press. It was obviously too fragile to merit much consideration. With 80% lightweight aggregate and 20% clay we still got something similar to the 10% clay block but it was improving. At 70% Materialite and 30% clay we got a good producable block off of the machine and after playing around a little longer it was found that some thing between 25% and 30% clay would allow us to press good block.

Runs from 80-85%

At the other end of the scale it was determined that the maximum amounts of raw clay would run from 80 to 85%. All of these runs were made using some kind of binder and minimum amounts of water. It became apparent that a wide range of aggregate-clay ratios were available and I suppose that the choice would be influenced by economic and production factors.

On the 100% clay block, the unfired unit of 8 x 4 x 16 weighed about 28 lbs, although this would vary from clay to clay. Using a mix of about 30% clay and 70% Materialite the green weight dropped to about 22 lbs. Of course in firing you lose additional weight, in the later case down to perhaps 20½ lbs. Looking at weight alone this would be equivalent to 40 lb. block perhaps a little heavy, but of course by increasing the coring area this would be brought down some.

Problem number two was firing. As you know we are machinery

Continued on page 62

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V-BELTS, by Gates. As replacements on standard drives this Vulco rope with 40% more load-carrying ability gives longer service.

26/Circle on Reader's Service Coupon

KILNS AND DRYER KILN by Harrop Ceramic Service Co., increases production and lowers costs. Also reportedly assures greater quality control and therefore uniform high quality finished products.

27/Circle on Reader's Service Coupon

BEARINGS by Timken include three new applications that get longer life and minimum maintenance using Dodge pillow blocks with Timken bearings.

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BRICK FORKS by Bickerstaff, Inc., is reportedly a sure way to move brick safety in a hurry and at a lower cost per load.

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HOW TO USE:

All you do is circle the number of the editorial item or the page number of the advertisement on this card, and mail it to us.

VENTILATING EQUIPMENT by the Robinson Ventilating Co. is geared towards the smooth handling of air in kilns, dryers and sintering belts.

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TUNNEL KILN CONTROLS by Honeywell cuts firing costs, steps up efficiency and increases quality. Gives uniform firing and better ware and is said to reduce rejects.

31/Circle on Reader's Service Coupon

1 American Instrument Co.
2 Adel Clay Products Co.
3 Wm. Steinen Mfg. Co.
4 Graton & Knight Co.
5 Muller Machinery Co.
6 Clark Equipment Co.
7 Barber-Coleman Co.
8 Le Tourneau-Westinghouse Co.
9 Process Solvent Co.
10 Garden City Fan Co.
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13 Westinghouse Electric
14 Paris Mfg. Co.
15 Bradney Machine Co.
16 Besser Co.
17 Cement Gun Co.
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19 Clearfield Machine Co.
20 B. F. Drakenfeld
21 Baltimore & Ohio
22 Kimberly Clark Co.
23 Stoody Co.
24 Edward Orton
25 Manufacturers Equip. Co.
26 Gates Rubber Co.
27 Harrop Ceramic Service
28 Timken Roller Bearing
29 Bickerstaff, Inc.
30 Robinson Ventilating
31 Minneapolis-Honeywell
32 Raybestos Manhattan
33 Mason Color & Chemical
34 National Paint & Manganese
35 Chisholm, Boyd & White
36 Miller Equipment Co.
37 Stanley Steel Strapping
38 Ferro Corp.
39 Bonnot Co.
40 North State Pyro.
41 Chambers Bros.
42 Babcock & Wilcox
43 Pearne & Lacy
44 Williams Patent Crusher
45 R. G. Varner
Page 2 Bonnot Co.
Page 3 Lead Industries
Page 4 Acme Steel
Page 6 Stephen-Adamson
Page 7 Metal & Thermit
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CONDOR V-BELTS by Raybestos-Manhattan, Inc., have reportedly resulted in an engineering advance of major importance to V-belt users due to continued improvements in the belts themselves.

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UNDERGLAZE AND OVERGLAZE COLORS by Mason Color and Chemical Works, Inc. Company stands ready to discuss individual color problems.

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EXPANSION OF FACILITIES by National Paint & Manganese Co. is in process. Company makes Chromite, Magnetite, Flourspar, and Manganese.

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DRY PRESS BLOCK by Chisholm, Boyd & White is dense and tough, has greater compressive strength, straight square edges and easy to glaze and paint.

35/Circle on Reader's Service Coupon

DOUBLE ROTOR HAMMERMILLS by Miller Equipment Co. is said to give bonus pulverization and a high percentage of fines. Is rugged and dependable.

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HEAVY DUTY STEEL STRAPPING TOOL by Stanley efficiently packages products and containers of every type, size shape and weight, increasing packaging flexibility.

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LUNAR YELLOW by Ferro called C-412. A glaze satin, this is clear green, lemon yellow needed for pure yellows and clean, blended colors in ceramic glazes.

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MACHINERY, BY the Bonnot Co., incorporates nearly 70 years of built-in integrity of performance that assures less down time and reduces maintenance expense.

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CAR TOPS by Paco are reportedly economical, longer lasting and stronger and can cut replacement costs as much as 50%. They are made from the mineral pyrophyllite.

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NO. 2-12 MACHINE by Chambers Bros. aids in maximum production of brick, tile, or refractories through use of a wide augur and lining selection.

41/Circle on Reader's Service Coupon

INSULATING FIREBRICK by the Babcock & Wilcox Co. The first shuttle kiln has completed 800 burns and the second kiln over 600 with the linings reportedly withstanding the service extremely well.

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HORIZONTAL OFF-BEARING EQUIPMENT by Pearne & Lacy, Inc. Machinery Co., is a patterned process for the automatic manufacturing of horizontally extruded clay sewer pipe.

43/Circle on Reader's Service Coupon

HEAVY DUTY HAMMERMILL by Williams Patent Crusher & Pulverizer Co., is said to cut costs as much as 50% on production and up to 75% on equipment.

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STEEL BUILDINGS by Varco. There are 52 brick and clay manufacturing "spots" throughout the U.S. and Canada that utilize Varco steel buildings.

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Just What Does A Ceramic Education Offer?
What Does the Present Curriculum Include?

B&CR Visits America's Ceramic Schools

Just what does a Ceramic engineering school have to offer me? Where can I attend a school of this type that will offer courses tailored to what I need? Is there a school of this type in my section of the country?

These are some of the questions that high school seniors and undergraduate students are asking in regard to one of the most engrossing and fast-growing fields of study today-ceramic engineering.

In an effort not only to inform these people but also in hopes of enlightening others on the advantages that may be gleaned from such an education, the editors of *Brick and Clay Record* have prepared a series of short articles to be presented monthly on ceramic engineering schools. Throughout this series we will attempt to present a clear concise picture of the courses offered, physical facilities available and general advantages of a ceramic education.

On campuses such as these at Alfred University in New York State, college students are seeking a career in ceramics. While this phase of education is not new, in the opinion of many it has yet to realize its full potential. For the first of a series on ceramic schools turn page.

"Let Each Become All He is Capable of Being."

This is the motto of the State University of New York under whose auspicies functions the College of Ceramics at Alfred University, Alfred, N.Y. The village of Alfred is in Allegany County, 74 miles south of Rochester.

The college had its beginning as the New York State School of Clay Working and Ceramics which was established at Alfred University in 1900. At the time that the school was established there was only one other University offering specialized courses in ceramics. Through the years the college grew, and except for a slight decrease in registration during WW II continued to prosper as more and more people became interested in the ceramic field.

After the war a record registration was noted. Under the direction of Dr. Sammuel R. Scholes who served as Dean from 1946-1948 provisions were made for handling the heavy post war research program. Engineering and technology courses were reviewed and reconstituted in order to strengthen basic courses. Other courses in humanistic-social studies received added emphasis to further development in the ceramic design program. A reference library was established and appropriations were obtained for the erection of a grinding and clay-storage building and positions were established for the purpose of strengthening work at the graduate level.

In 1955 a program leading to the Ph.D. in Ceramics Science was established. The Ceramics building, in which most of the work of the college is carried on, was dedicated in June, 1953 and is known as Binns-Merrill Hall. The building and its equipment represent an outlay of approximately two million dollars and provide fine and complete facilities for ceramic education.

Among the features possessed by this building are a well-equipped library, mineralogy labs, chemistry labs, special facilities for research and development, air-conditioned lecture rooms and a 194-foot long kiln room two stories high.

A grinding and clay storage building was constructed in 1949. This concrete block building has been used for grinding and clay storage, but it is planned with the moving of the grinding equipment to the new building to use the other building for a freshman shop and as a lab where pilot-plant work may be carried out.

The ceramics labs are equipped with modern apparatus and machinery needed for clay and mineral processing, body mixing, and body preparation, shaping and forming of ware, drying and firing of samples, the testing of products and analyses of minerals. The special labs, such as those for chemistry, petrography, spectroscopy, electron microscopy, and x-ray have excellent and adequate equipment.

The ceramic reference library is full of books related to all phases of ceramic engineering, technology, art and design as well as other pertinent sciences. Some 12,000 bound volumes of art and technical books are available as well as many unbound bulletins, reprints, pamphlets, etc.

Programs within the college have been accredited by the Middle States Accrediting Agency. Furthermore, the Ceramic Engineering course has been accredited by the Engineers Council for Professional Development and the Design course accepted by the National Association of Schools of Design.

All curricula have been developed having in mind sound educational principles and the needs of the ceramic industry. The ceramic industry has need for engineers whose work will be concerned with people, money and machines, and whose principal task is the economical production of ceramic wares. The industry needs designers who can create shapes and forms, who can select and develop colors, and who can maintain standards in decoration and architectural appropriateness. The industry also needs technologists to maintain quality and to further the understanding of the principals underlying the manufacture of ceramic products.

Corresponding with these industrial needs are the three departments: Ceramic Engineering, Glass Technology and Design. A student has the opportunity of choosing one of these in which to specialize. The choice of Technology, Glass Technology or Ceramic Engineering may be delayed until the end of the sophomore year; the work of the first two years being the same for engineers and technologists. The choice of Design must be made when the student enters college.

Ceramic Engineering

The course provides for a thorough grounding in the fundamental sciences of mathematics, chemistry, and physics. The first two years' work stresses these subjects. The last two years of the course are devoted primarily to the application of these fundamental sciences to the technical and engineering aspects of the ceramic industries.

The work of the ceramic engineer is usually the manufacture of ceramic ware. Although he may find work in research or sales, the ceramic engineer is primarily a production man. For this reason, the subjects of mathematics, mechanics, strength of materials, structures, and equipment design and plant layout are emphasized.

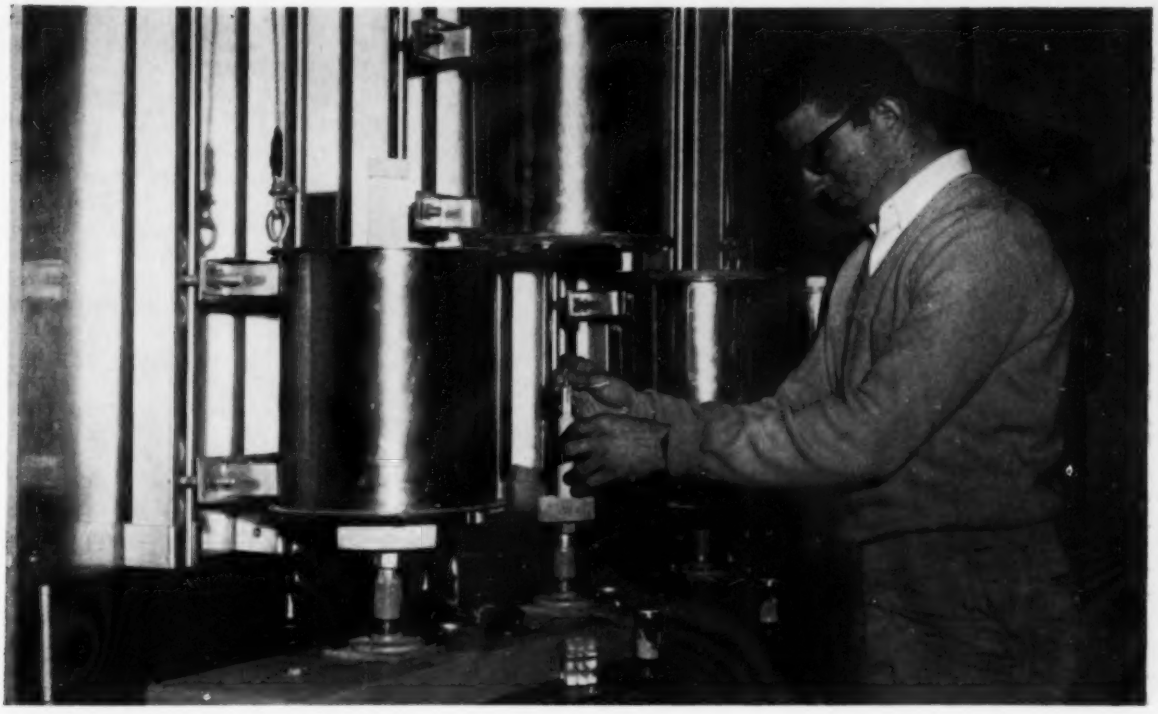
Program leads to the degree of Bachelor of Science.

Ceramic Technology

The course in Ceramic Technology differs from the course in Ceramic Engineering in but one respect. In Ceramic Technology, subjects generally accepted as technological in character have been substituted for the engineering subjects in the engineering curriculum. There is an active demand by the ceramics industries for graduates to serve as scientists and technologists in addition to the demand for engineers. The department provides for the education of students as scientists and technologists.

Research

The College of Ceramics regards research and development as being essential to good instruction of both undergraduate and graduate students. Therefore, it maintains an active research department which works closely with the undergraduate and graduate students. Although research is the primary departmental function, it is closely associated with the instructional program of the College of Ceramics. The staff members of this department direct research projects at the undergraduate and graduate levels, act in a consulting capacity on sponsored projects, teach courses and carry on original investigations.



Availability of the most advanced equipment and plenty of laboratory time prepares Alfred U. students for all aspects of the ceramic field.

The kiln room at Alfred affords students experience under simulated plant conditions. Alfred can boast of facilities on a par with any educational institution.

Continued from page 56

manufacturers not ceramic people and, did we find it out in a hurry for ourselves. We started running around to the different companies in the area asking how to fire our block and getting them to do it for us, but one of the problems was breakage connected with driving the test blocks over half of Chicago. A small electrically fired kiln was finally bought and installed at our plant and this allowed us to proceed on a better basis.

All clay fired to date has been in a maturing range that would work with vermiculite and Materialite. We found out that you can have a grog or light weight aggregate that has a somewhat higher maturing temperature than the bonding clay.

One thing that we feel is fortunate with our set up, is that we don't have much of a drying problem with the dry press method of forming. Most of our block have been pressed where in the range of 4% up to 13% maximum moisture content. It will vary of course but these are the limits that we have experienced. The great majority of the clays are worked in the 6-8% range of moisture.

After we had got into this test program pretty deep, Structural Clay Products Research Foundation brought some of their new aggregate material in and we made some block on the press using a range of mixes. Up to that time the SCRPF material produced the best block that we had made. It had good green strenght, it fired well and it was lightweight. Using a mixture of about 25% of SCPRF aggregate and 75% clay we made a block that when fired weighed 19-20 lbs. Using a 50-50 mixture by weight, the weight of this unit was cut to 17 lbs. and this then was the fired weight.

During the last few months we have been working with the Zonolite Co. using vermiculite as an agregate. This is now starting to appear a very promising method.

Using 2% vermiculite, by weight, the block when fired weighed only 17 lbs. Using 7% of vermiculite the fired weight of the block was dropped to 14 lbs. The testing series with vermiculite is not yet completed. We want to try about 2% vermiculite, 30% Materialite with the balance of the mix raw clay. We think that this combination will have some advantages over any thing that we have tried yet.

Previously I said that we wanted to make a block that would have enough quality to be rated as a facing unit. All of our experiments have indicated that this would be attainable with the smooth surface that results with the dry press method. It would also be possible to push the block through straight wires for textured effects or as with face brick processes today use revolving brushes. An additional alternative would be to use the rockfacing machine used in the face brick industry to develop a rock like texture.

I might add that the press used in our laboratory work is a standard model "X" Boyd press. The press will develop about 400 tons or slightly less pressure on the block at the maximum load. Production on this press would run about 500 pieces an hour. There is a larger model that will take two cavities and will produce about 1,000 block per hour.

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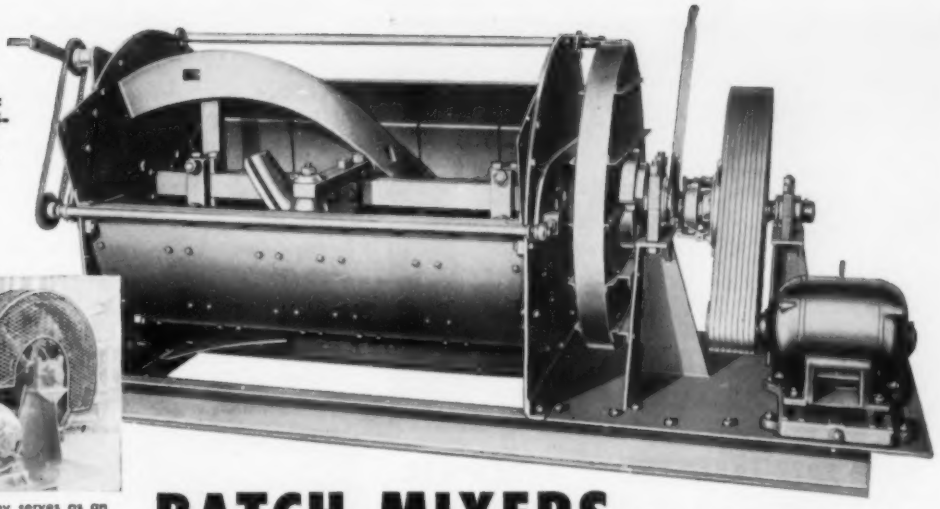

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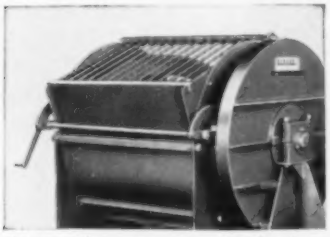

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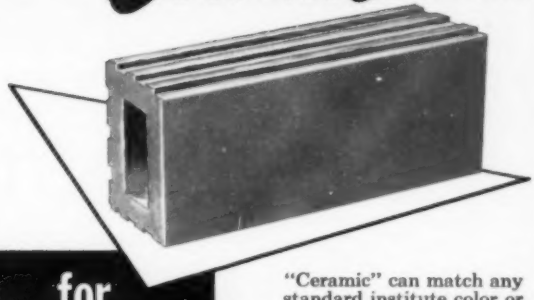

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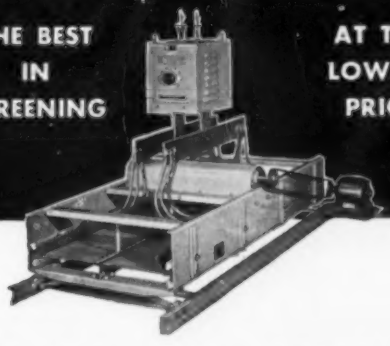

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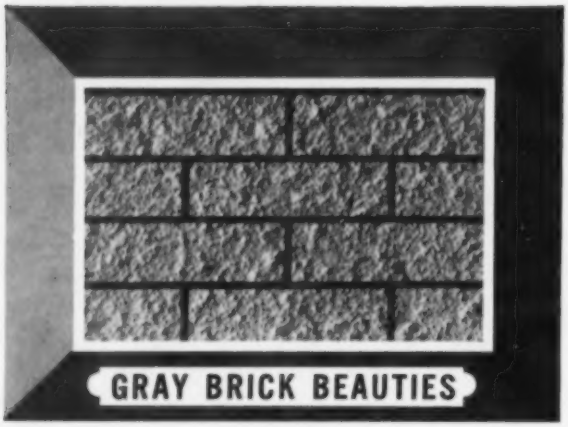

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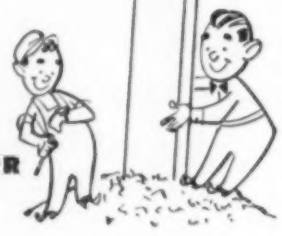

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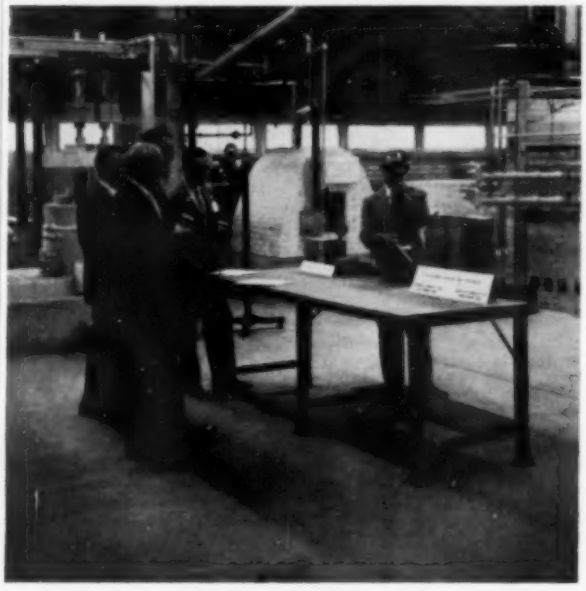
Continued from page 46

advances in this field. This group is also assigned to studies of refractories for the glass industry where the shift toward basic refractories is also vitally important.

Other staff groups are concerned with refractories based on silica, fireclays, bauxite, pure aluminum oxide, zircon, silicon carbide, and some other more exotic materials.

In addition to the division of organization by-product type, research groups may be assigned to the study of specific furnace problems. The glass industry, the firing of portland cement in rotary kilns, chemical processing, the metallurgy of space age alloys are all areas calling for special study.



Kiln room at center is divided into gas fired and electric fired areas. At open house an explanation was given of the uses of each type.

In the organization of a refractories research project, planning is handled by the research engineer with the help of the administrative staff. Some of the work to be done requires the help of specialists on the staff such as analytical chemists, petrographers, spectroscopists, photographers, linguists, librarians, and others.

Equipment from all parts of the country was brought to the center. Suppliers include such people as Leeds & Northrup, Chambers Bros., FRH and Brown. Mixers and grinders were furnished by Posey, Clearfield, Stevenson, Simpson and others. While the kilns were built by H-W according to their own designs, the hardware and controls represent a wide segment of American Manufacturers.

Equipment in the fine instruments section might be less well known to the average man in the refractory field but represents the most famous scientific equipment makers in the world. Even the most common-place equipment installed at the center represents sizeable investments and would include Detecto and Yale, Dravo and Draco and Denison and Hobart.

Book Review

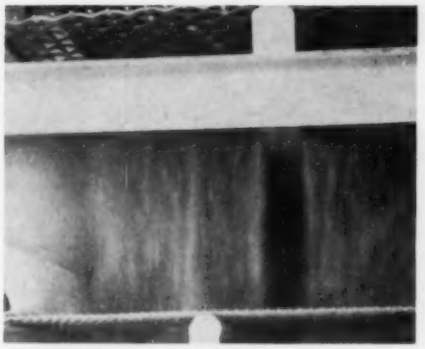
The Chemistry and Physics of Clays and Other Ceramic Materials
by
Alfred B. Searle and Rex W. Grimshaw—
Price is 16.25

In this third edition of a standard work of reference for the ceramic and allied industries full thought is given to the remarkable advance that has taken place in the many aspects of ceramics: that is, their manufacture, and application due in the main to extensive physico-chemical studies of the fundamental nature of the basic materials and their behavior at high temperatures.

The book pinpoints the fact that the old rule of thumb method of controls is now being replaced by scientific processes, which although unfortunately supplanting the craftsman, are undoubtedly opening the way to precision methods of manufacture.

The authors put particular emphasis on such items as the nature of clay and other ceramic materials, atomic and crystalline structure, crystal structure of the silicates and chemical changes in ceramic materials.

Other topics that draw attention from the authors included the crystal structure of the non-siliceous ceramic materials, the identification and estimation of minerals in ceramic materials and the influence of water in ceramic systems.



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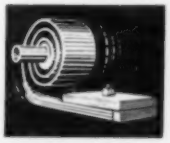

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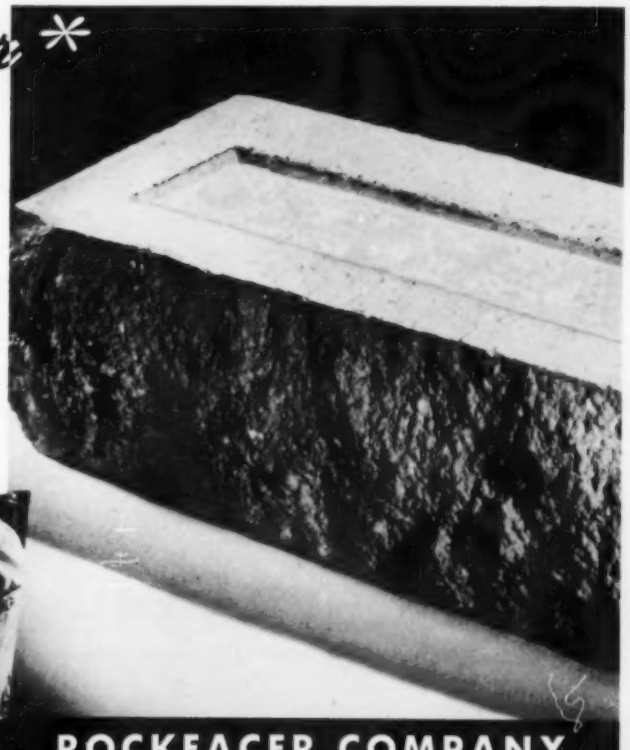

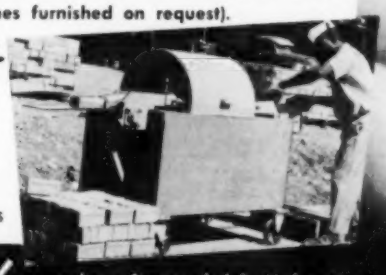

U. S. PATENT NO. 2,801,626 FOREIGN PATENTS PENDING

Send samples of your brick to be test-rockfaced for your inspection by. . .

ROCKFACER COMPANY
503 Hickory Tree Rd. (P. O. Box 547), Mesquite, Texas, ATlantic 5-6316

Continued from page 55

Thompson pointed out that the even wear of the ceramic die gives the pipe a smooth skin texture—with no scores, cracks or grooves in the pipe. This results in more accurate sockets for the new plastic seals. In addition, the problem of "tipped" sockets has been greatly reduced. Also since the Coors ceramic dies have been installed, dryer loss has decreased noticeably.

Commenting upon the cost factor, Thompson said, "The original cost for Coors ceramic liners is more than for cast iron parts. Cost of the ceramic die sets (core and ring) is approximately $625.00 per set of 8" dies in quantities of five sets. However, the far longer life of the ceramic makes these new liners considerably more economical than anything we had ever hoped to find.

"Because of the outstanding success of the first ceramic liner, we have purchased from Coors five sets of ceramic liners for 4" pipe. Coors is already making sample brick cores which have outlasted high alloy steel 10 times. Also, we are working with Coors on dies for extruding construction brick."

We estimate that without any doubt at all the dies can be used for at least 100,000 pieces of pipe. This estimate is based on one-half the former increase we allowed in the wall thickness of the pipe. In other words, we have reduced the allowable die wear by 50% and still expect more than 10 times the production possible with case-hardened steel dies and over 17 times the life possible with the alloy steel dies that we were using prior to January 22. No axial scoring of the dies has occurred and the pipe skin is still as smooth as when the dies were new."

Calculations show that, because there is less increase in pipe wall thickness—a result of the wear resistance of the ceramic dies—Denver Brick and Pipe Co. has used over 100 cubic yards less clay than would have been used for the 80,000 pieces of pipe produced under the conditions existing prior to January 22.

"To show you what a big difference the new Coors die has made," Thompson said, "we formerly tried cast iron dies which produced, on the average, 4,000 pieces of pipe; case-hardened steel that produced 8,000 to 9,000 pieces; and alloy steel that produced 6,000 pieces of pipe. At that time during the die life, the wall thickness of the pipe was allowed to increase 3/32" before the dies were discarded. After 3,000 pieces of pipe, the dies became axially scored and pipe surfaces became progressively rougher until the dies were discarded. Symmetrical control of the pipe became increasingly difficult and tipped sockets became more frequent as die wear progressed."

In detailing construction, Thompson pointed out that the die body itself is made of case-hardened steel to prevent excessive wear. This will be periodically chrome plated as wear occurs, a process that presents no problem with the ceramic since it is an insulator and therefore can be left in place during the plating operation. The hardened steel back-up ring behind the core bushing has not worn in use because the pipe being extruded is shaped by the ceramic.

Because of the long life of the ceramic dies, one man in the maintenance department doing relining has been moved to another job.

- **Chromite**
- **Magnetite**
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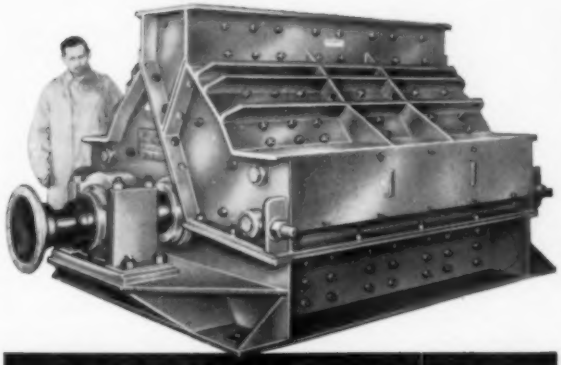
2 POSITIVE PRODUCT CONTROL

3 MORE GRINDING IN LESS TIME

4 LESS UPKEEP EXPENSE



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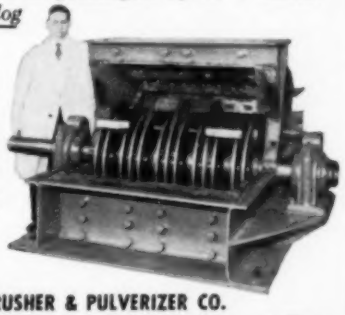

Internal view showing manganese steel impact blocks, hammers and liners. Rugged, heavy steel plate construction. Extra large shafts are mounted in oversize bearings sealed in self-aligning housings.

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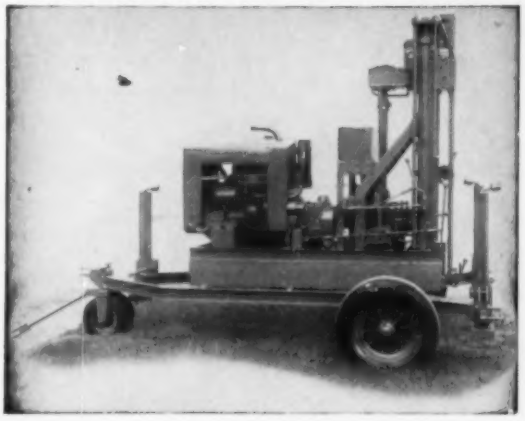

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Complete Information on Request

SPECIALISTS IN AUGER TYPE DRILLS

PARIS MANUFACTURING COMPANY

PARIS, ILLINOIS

Continued from page 51

cleaner after layup than the untreated walls.

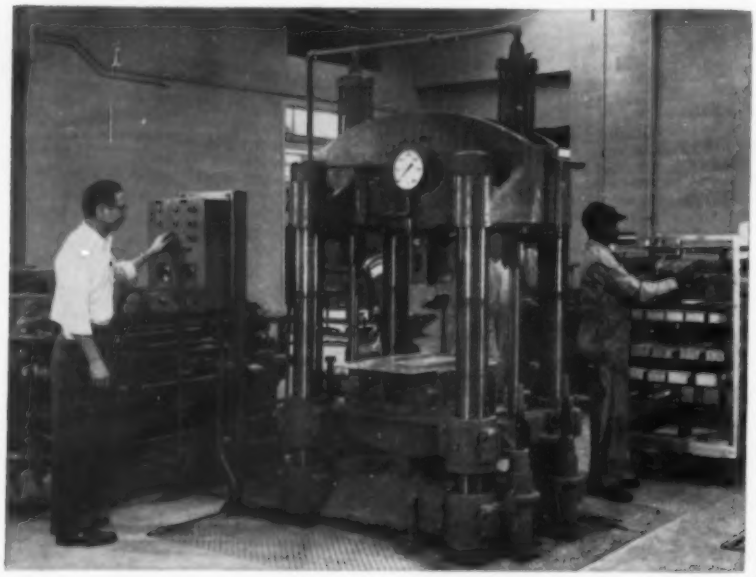
Test Description and Results

Before each wall was tested, the wall strength tester was fixed firmly in place as previously illustrated. The pressure in the polyethylene bag was then increased by increments of about five pounds per square foot, and the deflection at the midpoint of the wall measured. After each increment the load was reduced to zero to determine if there had been any permanent deformation.

This sequence of increasing loads was continued until the wall failed. Failure was indicated by a rapid increase in deflection, a decrease in air pressure, and usually by an audible sound of breaking of one of the joints. Most failures took place within one or two courses of the midpoint of the loaded wall, indicating that the test walls had been prepared uniformly. The loads required to buckle the test walls, expressed in pounds per square foot of uniform load, are shown as bar graphs in Table 1. Each figure is the average of at least three separate tests.

Results of tests on the highly absorptive bricks (bricks A, B, C, and D) show that the wall strengths obtained from treated bricks were greater than those obtained from the dry lay-up of untreated bricks at all concentrations tested. In three cases walls of untreated brick soaked before layup showed the best strengths, but it must be emphasized that this soaking was done under carefully controlled conditions that would seldom be duplicated on the job site. Brick E, one of moderate absorption, also showed improved wall strength with treatment. Brick F, a low absorption brick, showed only a slight decrease in strength at the concentration found best in laboratory tests (1 or 2 parts per 1000); higher concentrations resulted in a further decrease in strength. Brick G, is a very low absorption brick, also showed a strength reduction. Low absorption brick such as F and G may still benefit from treatment, but should be tested before they are treated commercially.

It should be stated in conclusion that the treatment is not primarily intended to improve the strength of brick walls, but to benefit brick in many other ways—by reducing absorption, ground stain, and efflorescence, and by making possible easier and cleaner layup. The wall tests described in this article have shown that Silaneal treatment improves the wall strength of high absorption brick and, at low but still effective concentrations, does not appreciably decrease the wall strength of medium absorption brick.



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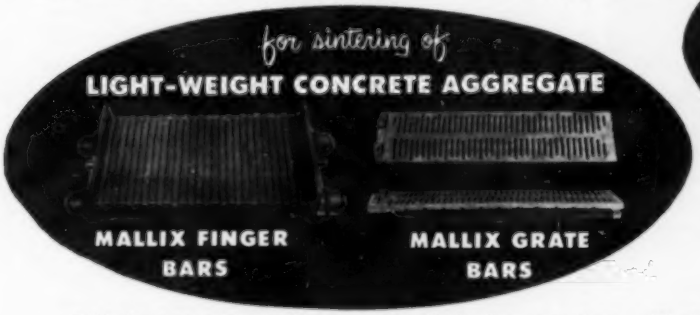

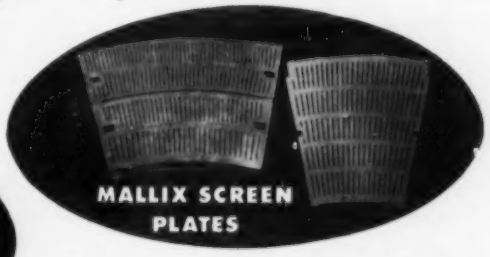

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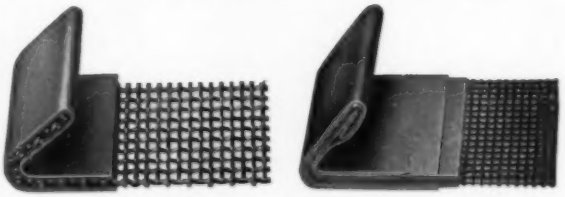

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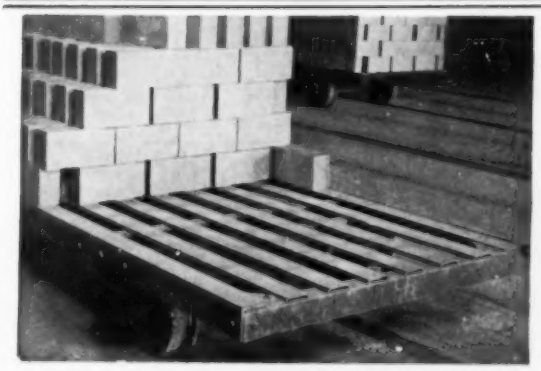

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Electric Cutter

WALTER C. STOLL & SONS
5028 Alhambra Ave.,
Los Angeles 32, Calif.
CApitol 2-1141

FOR SALE—USED EQUIPMENT

FOR SALE

BRICK MACHINES—Combination & Deairing
PUG MILLS—Single & Double Shaft
GRANULATORS—Chambers 51 & Freese 16
CUTTERS—Steele 18, Freese C-25, Hand Cutters
DRY PRESS—Boyd 4 mould Special
DRY PANS—4', 7', 9'
HAMMER MILLS—12x12, 24x12, 36x45
SMOOTH ROLLS—18x24, 16x30, 10x16, 30x36
DISINTEGRATORS—12", 18" & 24"
JAW CRUSHERS— 24x13, 18x24, 48x60
SINGLE ROLL CRUSHER—
ROTARY DRYERS & KILNS—2x20, 3x30, 6x40, 7'x80'
5'x6' KENNEDY VAN SAUN BALL MILLS AIR SWEPT—Steel Lined Blower & Motors
HAND TILE PRESS
MIXERS—Lancaster EAG 3 & 4, Clearfield #4x10, Simpson #3, Blystone
SCREENS—Hummer 3x5, 3x10, 4x10 Cedar Rapids 3½x10
FANS, PRESSURE BLOWERS—Many Sizes
FEEDERS—Disc Apron, Reciprocating, Even
HARDINGE CONICAL MILLS—3', 4½', 6', 7', 10'
PEBBLE MILLS—Various Sizes

List your spare equipment with us.

ROBERT L. CLARE
212 Rector St. Perth Amboy, N. J.
Phone Hillcrest 2-0061

FOR SALE: Deister Concentrating Table No. 14 SuperDuty, rubber covered and rubber riffled, diagonal deck, 1½ hp., excellent condition, attractively priced, immediate shipment. Loeb Equipment Supply Co., 824 West Superior St., Chicago 22, Ill.

FOR SALE—PLANT

FOR SALE—BRICK plant, in operating condition in New Mexico. Best shale deposit in state. Owner wishes to retire. Address Box 11-QBH, care of BRICK & CLAY RECORD. 11-4

POSITION WANTED

Young aggressive manufacturers representative with college, 10 years experience, seeks top sales position with face brick manufacturer. Write Box 7-NLN, i/o Brick & Clay Record.

WANTED POSITION—As superintendent or manager. Experienced in all phases of face brick and tile production and sales. Tunnel and periodic kiln construction and operation. Best of references. Address Box 7-FPP care of Brick & Clay Record.

POSITION WANTED—As temporary assignment by a graduate Ceramic and Mechanical Engineer with 20 years experience in plant design and lay out, raw material examination and investigation property mapping, drying, and combustion studies, crushing, grinding and classification, equipment specification, supervision of constructon and operation, new product development, operations research and statistics, material handling and packaging engineering. Will submit detailed qualifications and renumeration schedule on request. Address Box 5-WAU, care of Brick & Clay Record.

WANTED—HELP

Ceramic Engineer—Old established company has opening for Ceramic Engineer with experience in steel plant refractories for sales and service in middle west steel plants. Salary and expenses. Car furnished. Replies confidential. Address Box 5-NWW care of Brick & Clay Record.

PLANT SUPERINTENDENT—For large Midwestern plant utilizing both tunnel and periodic kilns in the manufacture of red and buff face brick. Replies confidential. Send resume to Box 7-FTT, care of Brick & Clay Record.

WANTED—Experienced Ceramic Engineer for brick plant in Toronto Metropolitan area, Ontario Canada. Reply giving full particulars of qualifications, experience, etc. to Box 7-ZAM, care of Brick & Clay Record.

WANTED—HELP

Ceramic Engineer to head up a refractory quality control program for several plants. Must have some experience in both quality control work and production. Excellent opportunity. Location in Middle West. Our employees are aware of this opening. Box 7-EAL, i/o Brick & Clay Record.

Ceramic Engineer wanted in ceramic plant in Western Pennsylvania, Ohio and West Virginia area, who manufactures Steatite, Zirconia, Zircon, Magnesia, etc. Good chance to advance. Write Box 7-LCC, c/o Brick & Clay Record.

MISCELLANEOUS

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(Established 1892)

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Clay Working Machinery
Car Tunnel Kilns—Dryers

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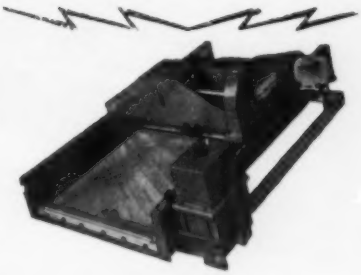
For Sale—Lower Kittanning buff burning plastic Fireclay.
Mine run, crushed, or ground. Prices on request.
Write 4-NDE, c/o Brick & Clay Record

FOR SALE—BUFF BURNING FIRE CLAY, lump or ground. Ask for prices at mine or delivered via truck or railway. Boox & Co., Macomb, Illinois.

Sell Your Used Equipment in the Classified Columns



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SEE OUR CATALOG IN
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P-138, 139

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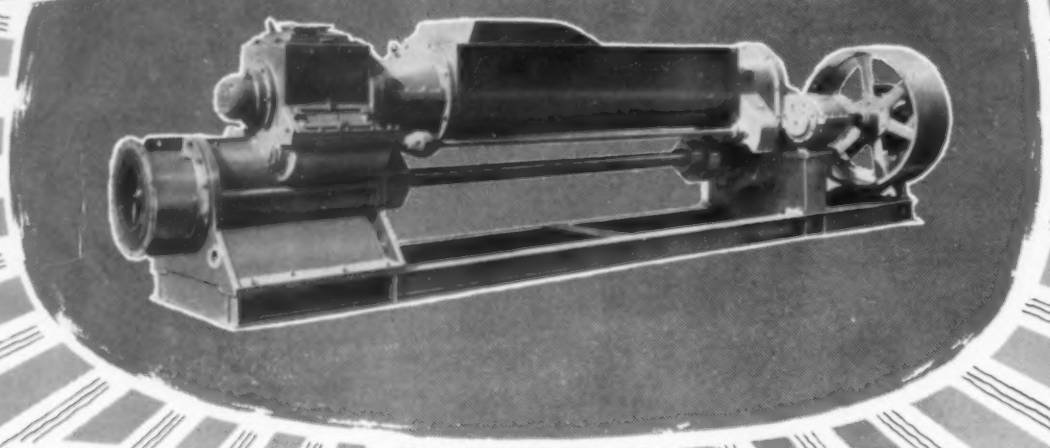

Steele No. 40F Combined Deairing Machine

This combined type machine is doing a very satisfactory job on sewer pipe in many plants. We ourselves prefer a separate drive type of deairing machine for sewer pipe for the simple reason that the extrusion augers and ONLY THE EXTRUSION AUGERS on separate drive machines stop and start when each piece is made . . . thus allowing the pugging and sealing equipment to run continuously for the maximum and the most uniform tempering. Both our famous No. 50F Extruder and Pug Sealer and our newer No. 60F Combined Separate Drive Type Deairing Machines provide these valuable extras.

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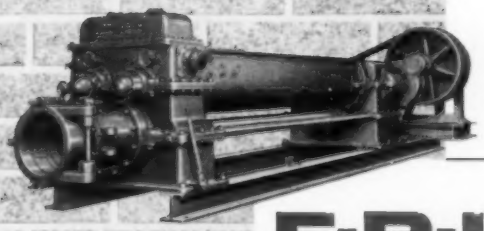

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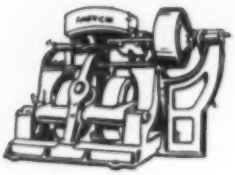
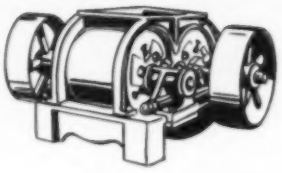
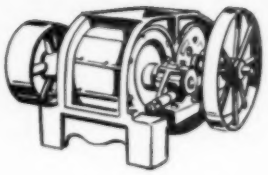


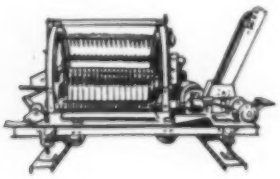
GRINDERS



SMOOTH ROLL CRUSHERS

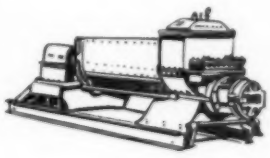


DISINTEGRATORS



ELECTRIC CUTTERS

REPRESSES



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Years of experience in planning and producing clay machinery stands behind the reliable name AMERICAN. For more than 100 years, AMERICAN engineers have designed and outfitted many complete clay plants from pit to kiln.

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